For producers of Sand
ıd Gravel, Crushed Stone,
ement, Lime, Gypsum, and
other nonmetallic minerals

JANUARY 1957

PIT and QUARRY

Table of Contents, Page 2

The Road Ahead—A Preview of the Growing Highway Construction Activity.

ANNUAL REVIEW & FORECAST ISSUE

Real Flexibility — Each ply is full-pasted to itself—but not to the other plies.

Armored Strength — The accurate overlapping of paper tube ends together with the built-in flexibility gives chain-mail strength to both ends of the bag.

New Full Wrap-around Valve Sleeve — This complete sleeve, combined with armored strength and real flexibility, means stronger, more sift-proof and cleaner bags.

All this adds up to wide service and greater values to all users of Bagpak multiwall bags.

For more information, prices and delivery dates, call nearest branch, or call direct.

produced on new equipment—the latest, most accurate, and finest machinery made.

International Paper COMPANY

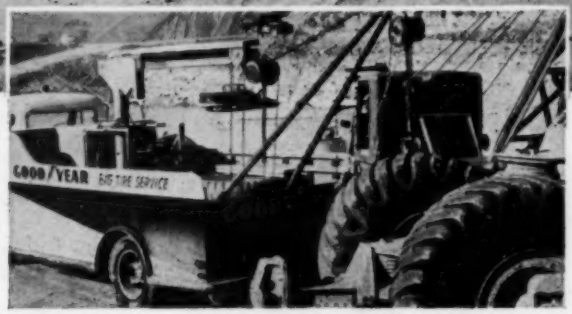
BAGPAK DIVISION
Dept. P-1

220 EAST 42ND STREET, NEW YORK 17, N.Y.

BRANCH OFFICES: Atlanta · Baltimore · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Des Moines · Detroit · Kansas City, Kansas · Los Angeles Minneapolis · New Orleans · Philadelphia · St. Louis · San Francisco · IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

BIGGEST CUT IN U.S. ROAD-BUILDING HISTORY

TO HELP BREAK CALIFORNIA BOTTLENECK



SECOND ONLY TO THE PANAMA CANAL in earth-moving magnitude, this 8½-million-yard cut will result in a canyon 1,370 feet wide and 350 feet deep at San Francisco's Carquinez crossing. Although much rock is being encountered, blasting is kept to a minimum and rippers and scrapers help keep the pace close to 30,000 yards per two-shift day! Goodyear 3-T Nylon Cord HARD ROCK LUG tires are taking this tough job in stride.

HOIST EQUIPPED RIGS make quick work of tire maintenance —help cut tire-cost-per-yard to new lows.

Another bottleneck broken!

TUBE AND FLAP TROUBLES ENDED FOREVER

with Triple-Tempered 3-T Nylon Cord

TUBELESS TIRES!

AIR DOESN'T SEEP THROUGH 3-T CORD BODIES — and Goodyear's mounting program is quick, safe, airtight, from smallest to largest sizes.

That's why Goodyear TUBELESS tires and rims are standard on foremost original equipment—and can be specified for *all* equipment.

But there's no need to wait. You can get all regular Goodyear features—plus the following TUBELESS advantages by changing over present equipment NOW:

No tube or flap troubles! No tube replacements! Easier mounting! Airtight assembly! Cooler running! Slow leaks instead of blowouts! Easier repairs! Simpler, re-usable valve parts! Simply contact your Goodyear dealer. Goodyear, Truck Tire Dept., Akron 16, Ohio.

NOW IN 3-T NYLON CORD — TUBE-TYPE OR *TUBELESS!*

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

Buy and Specify

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Road Lug, Sure-Grip, All-Weather—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

PIT AND QUARRY, January, 1957, Vol. 49, No. 7. Published monthly by Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $5 for 1 year in the U.S., possessions and Canada. Central and South America $10 for 1 year, elsewhere $15. Single Copy $.50 except $1 for January, May and July. Entered as second class matter February 23, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. Postmaster: please send notices on Form 3579 and copies returned under label Form 3579 to 431 South Dearborn Street, Chicago 5, Ill.

pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

JANUARY 1957 Vol. 49 No. 7

IN THIS ISSUE:

EDITORIAL

Pit and Quarry Industries Set New Records 10

REVIEWS AND FORECASTS

Construction—Federal Highway Program, Other Construction in 1956 130
Cement—1956—Record Year for Cement Production 138
Aggregates—Production Continues Climb 156
Miscellaneous—Nonmetallics Maintain Vigorous Activity.... 164

PLANT

Preheater Raises Fuel Efficiency, Capacity at Coplay Plant... 78
Warner Company's Control of Air, Stream Pollution 82
3,600 T.P.D. Lakeside Stone Plant Serves Southeast Area.... 100
Union Gypsum's Board-and-Lath Plant..... 106
Morrisville Plant of Warner Company 181
Standardized Semi-Portables Solve Aggregate Problem.... 206
Lynchburg Stone Service Corporation's 1,500 T.P.D. Plant... 208

SAFETY

44th National Safety Congress..... 93
National Crushed Stone Assn. Safety Contest Winners..... 187

ASSOCIATIONS

Cement, Nonmetals Featured at A.I.M.E. (N.E.) Conference. 89

OTHER

Business Decisions That Affect Your Income Tax Return..... 110
Power for Potash Mining 190
Portland Cement Assn. to Add Two Laboratory Units..... 216

THE CONCRETE MANUFACTURER

EDITORIAL

"Many Receive Advice—Only the Wise Profit by It"..... 303

REVIEWS AND FORECASTS

Ready-Mixed Concrete—Northeast Leads in Production Gain. 333
Block—Production Off Slightly in 1956 336
Concrete Pipe—Industry Registers Small Production Gain.... 345
Prestressed Concrete—Completes Best Year of Growth 349

PLANT

Precasting to Prestressing 328

ASSOCIATIONS

Southeastern Concrete Masonry Association Meeting 350
A.C.I. Regional Meeting Features Prestressed Concrete, Winter Concreting 362

TECHNICAL

Rx Ready Mix—More Imagineering Needed 322

DEPARTMENTS

Washington News Letter 12
News of the Industry 23
Coming Events 23
Screenings 48
New Machinery 52
Labor Developments 71
More Information Please 197
Legal Decisions 218
Manufacturers' News 250
Obituaries 288
Industry Personalities 289

News of the Concrete Industries.305
New Machinery for the Concrete Industries 368
Index to Advertisers 409

Cover Picture

• On the front cover of this issue of PIT AND QUARRY is a scene that portends many more such views throughout the entire country as the highway program gathers momentum. The locale of this photograph is one section of the new 237-mile Kansas Turnpike as it appeared during construction. (See PIT AND QUARRY, September 1956, p. 70.) In the operations shown here, two mixers were employed in pouring daily a half-mile of 10-in. slab 24 ft. wide. More than 12,000,000 tons of aggregates and base materials were required on the full project.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals.

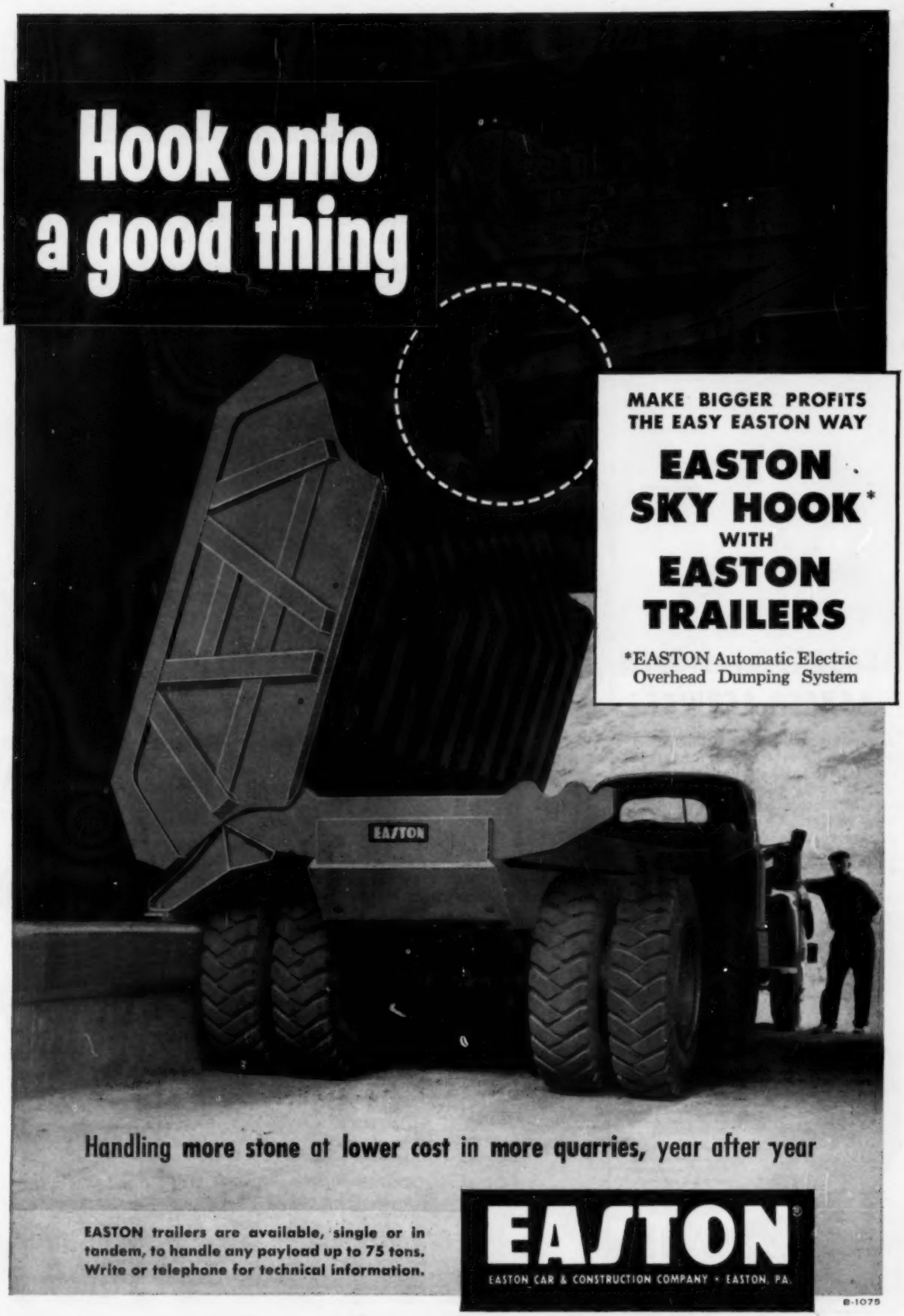
Copyright 1956 by Pit and Quarry Publications, Inc., 431 S. Dearborn Street, Chicago 5, Illinois.

PIT AND QUARRY magazine was founded by H. W. Baumgartner, October, 1916.

To subscribers: When requesting change of address, kindly send old as well as new address.

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

Hook onto a good thing



MAKE BIGGER PROFITS
THE EASY EASTON WAY

EASTON SKY HOOK* WITH **EASTON TRAILERS**

*EASTON Automatic Electric Overhead Dumping System

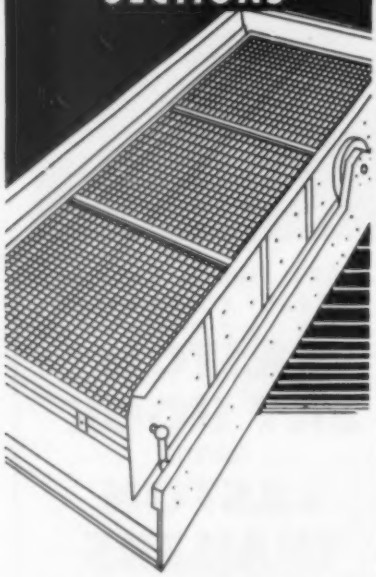
Handling **more stone at lower cost** in **more quarries**, year after year

EASTON trailers are available, single or in tandem, to handle any payload up to 75 tons. Write or telephone for technical information.

EASTON®
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

B-1079

CLEVELAND VIBRATOR SCREEN SECTIONS



ACCURATELY WOVEN LONGER SERVICE

Accurately woven CLEVELAND Screen Sections are designed to withstand the constant shattering action of heavy-duty vibrating units. Available in all commercial metals and alloys CLEVELAND Screens provide greater resistance to abrasion, corrosion, blinding, and drastically reduce wire breakage.

Engineered to individual job specifications in any size or wire diameter. Samples available upon request.

CUSTOM-BUILT

Custom-built and adapted to individual needs. Available in all commercial metals and alloys.

Write for Bulletin 6, 7, and 8

The CLEVELAND WIRE CLOTH & MFG. Co.
3576 E. 79th St. Cleveland 5, O.

pit and quarry

WALTER E. TRAUFFER
Editor

HARRY F. UTLEY
Pacific Coast Editor

ROY L. PECK
Field Editor

BUREN C. HEROD
Field Editor

M. E. ANSEL
Assistant Editor

JAMES G. KOSTKA
Director of Marketing and Research

JANET M. COHN
Editorial Assistant

JAMES E. MONTGOMERY
Chairman of the Board

WILLIAM A. WILSON
President

RAY L. SMITH, JR.
Senior Vice-President

W. T. KLUSSMAN
Secretary-Treasurer

ROBERT L. RUDD
Circulation Manager

GEORGE P. GRANT
General Sales Manager

HAROLD L. DAVIS
Production Manager

CHICAGO BUSINESS OFFICE
431 South Dearborn Street, Chicago 5, Illinois, HArrison 7-8558

FRANK J. CORNYN
Vice-President and Midwest Sales Manager

RAYMOND S. NEUWELT
Representative

NEW YORK BUSINESS OFFICE
370 Lexington Avenue, New York 17, N. Y., MUrray Hill 5-4438

JOHN R. DUBLE
Vice-President and Eastern Sales Manager

RICHARD J. MURPHY
Representative

CLEVELAND BUSINESS OFFICE
453 The Arcade, Cleveland 14, Ohio, CHerry 1-4431

CHARLES H. BUSSMANN
Vice-President and Central Sales Manager

J. G. JOHNSON
Central Advertising Manager

WEST COAST OFFICE
HARRY F. UTLEY, 820 N. Magnolia Avenue, Whittier, California

REPRESENTATIVES

FRED W. SMITH
1212 41st St., Belview Heights, Birmingham 8, Alabama

THE McDONALD-THOMPSON CO.
San Francisco, California

EDWARD T. THOMPSON
3727 W. 6th Street
Los Angeles 5, California

T. HARRY ABNEY
National Building
Seattle 4, Washington

ROY M. McDONALD
625 Market Street
San Francisco, California

ROBERT H. HEIDERSBACH
222 Colorado National Bank Bldg.
Denver 2, Colorado

FRANK N. VICKREY
3217 Montrose Blvd.
Houston 6, Texas

TED R. TRAUTMANN
2010 South Utica
Tulsa 4, Oklahoma

He has given NORTHWEST THE ROCK TEST!

NORTHWESTS keep the Rock moving for Houston Clinton, Burnet, Texas

HERE'S an unusual quarry operation. Out of this 90-ft. face comes road material, railroad ballast, riprap, filter stone, fluxing stone used in the Texas Steel Mills, and a chemical stone. Five of the seven Northwests Houston Clinton owns are used to produce this wide range of materials.

Here is another of the many installations that demonstrates Northwest ability in rock.

Your Northwest is a real Rock Shovel, built for rock, proved in rock. It has the advantages that make it a better rock shovel. The Northwest Dual Independent Crowd utilizes force most independent crowd shovels waste. The "Feather-Touch" Clutch Control makes operation easy without resorting to delicate valves, pumps or compressors. The Cushion Clutch eliminates the damaging shock overloads *before* they reach machinery — not after. Uniform Pressure Swing Clutches take out the jerks and grabs that make spotting the dipper difficult and add ease to handling the big ones.

There are other advantages you should ask about. Remember, Northwests have a proved record of making money because when you have a *real* Rock Shovel you never have to worry about output in *any* digging.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street • Chicago 3, Illinois

580-15-SG

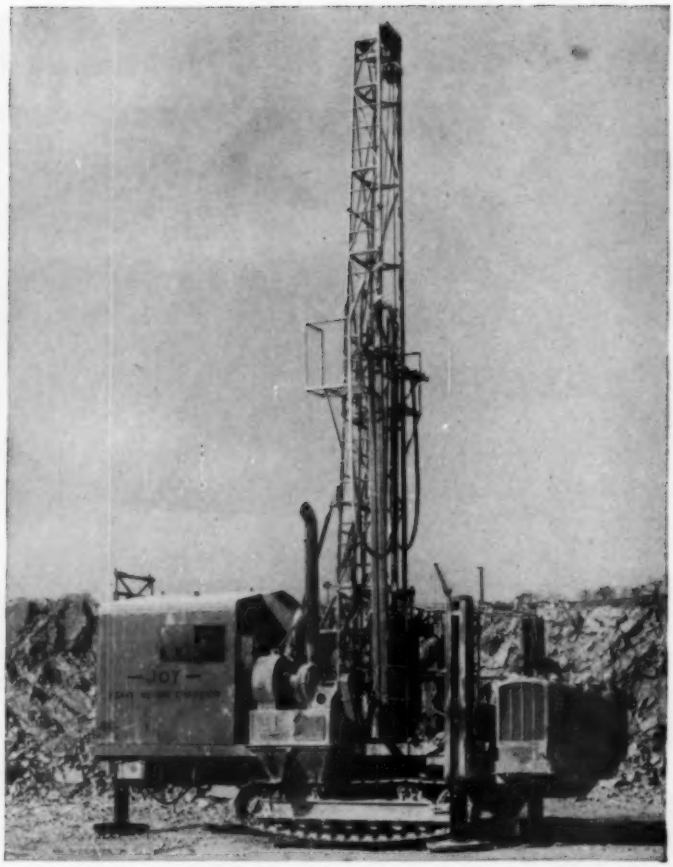
NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Convertible for any Mining Material Handling or Excavation Problem

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1937 AMERICAN ROAD BUILDERS ASSOCIATION

"...this JOY CHAMPION BLAST HOLE DRILL was so good We Bought TWO More"



"IT OUTDRILLS SEVEN CHURN DRILLS"

at the G. & W. H. Corson Quarry, Plymouth Meeting, Pa.

CHARLES LAUMAN
CONTRACT BLAST HOLE DRILLER
NORRISTOWN, PA.

"That's not all," states Contract Driller Charles Lauman. "Most of our drilling is in hard, tough dolomite with strata tilted at all angles and loaded with clay pockets and clay seams. We have found that the 58-BH Joy Champion will drill a smoother vertical hole wherever the hole is spotted. This eliminates toes and gives our customers a straight vertical face. We're convinced it's the best machine for the job—so much so that we bought two more on the strength of this one's production."

The Joy Champion DRILLS DRY with a tri-cone roller bit which continuously pressure-cuts the rock. An air-blast, forced down the drill pipe and through the bit, cools the bit and forces cuttings to the surface.

The Champion drills straight, smooth-walled, easily loaded holes up to 7⅞" diameter and to any quarrying depth required. It moves fast between holes and sets up quickly for drilling on three hydraulic jacks. Two Champion models—Mediumweight and Heavyweight—can be furnished with either electric or diesel drive. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Consult a Joy Engineer

OR **Write for FREE Bulletin 115-26**

WSW R5374-115

JOY

PIONEER AND WORLD'S LARGEST MANUFACTURER OF ROTARY BLAST HOLE DRILLS

D-457

Production at a profit . . . wherever you use it

DIAMOND 77 PORTABLE CRUSHING and SCREENING PLANT

Here are the cost-cutting, production-boosting advantages that put Diamond way out in front:

- ★ **Big, powerful crushing capacity with a 10" x 36" jaw crusher and a 36" x 22" star gear roll crusher.**
- ★ **Speedy separation of material on a 4' x 12', 2½ deck vibrating screen.**
- ★ **30" wide belt conveyors.**
- ★ **The Diamond "line-flo" rotor-lift principle that guarantees fast, continuous movement of aggregate.**

You get all these in a Diamond plus complete portability . . . a hydraulic mechanism to lower the screen deck to travel position . . . and rugged Diamond construction throughout for practically any type of crushing operation. No wonder reports from the field read like these:

"300 to 400 tons per hour of road gravel in 25% to 35% crush" . . . "less down time, more production" . . . "oversize roll crusher and screens do the trick" . . . "smoothest operating plant we have seen".

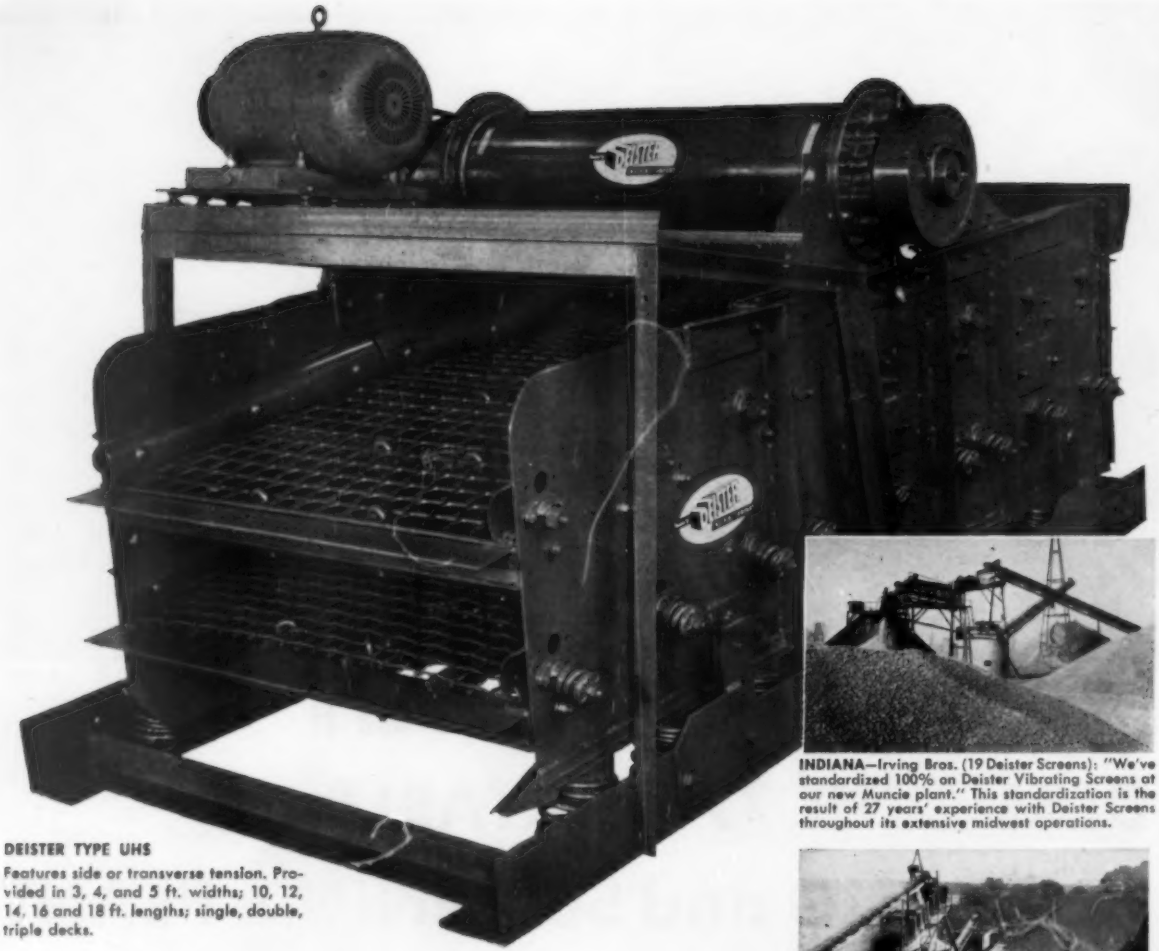
And remember . . . Diamond gives you a choice of drives. Mechanical drive with one power unit is standard. Optional drive: (1) one power unit to drive crushers with electric motors to drive screens, rotor-lift and conveyor, and (2) same as No. 1 except for motorized head pulleys on all conveyors.

There will be a Diamond Type 77 "All American" plant at the Road Show. Be sure to see it.

DIAMOND IRON WORKS
division
GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place • Chicago 9, Illinois

Everything For The Aggregate Producer

Jaw Crushers • Roll Crushers • Conveyors • Screens and Washers • Feeders and Bins • Portable and Stationary Crushing Plants For Rock and Gravel



DEISTER TYPE UHS
Features side or transverse tension. Provided in 3, 4, and 5 ft. widths; 10, 12, 14, 16 and 18 ft. lengths; single, double, triple decks.

INDIANA—Irving Bros. (19 Deister Screens): "We've standardized 100% on Deister Vibrating Screens at our new Muncie plant." This standardization is the result of 27 years' experience with Deister Screens throughout its extensive midwest operations.

KANSAS—Kerford Quarries, Atchison, Kan., Amazonia, Mo., Ashland, Neb. (9 Deister Screens): "We have never seen screens perform any better or require less care. We haven't touched a Deister Screen bearing at Ashland since start of operation, April 1952."

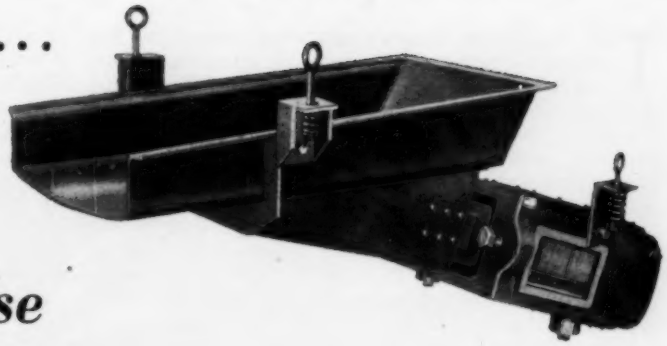
NEW YORK—Sand and Gravel Division of East Coast Lumber Terminal, Inc., Farmingdale, N. Y. (4 Deister Screens): "3½ million tons of bank-run feed went over our first Deister in 8 years . . . maintenance averaged less than 29c per thousand tons, not including screen cloth, of course."

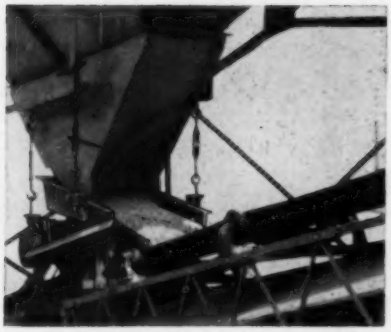
Deister owners report more tonnage to exact specifications

Specifications tougher? Competition keener than ever? Aggregates producers need all the screening efficiency they can get today. And here's why they're *getting* it with Deister Vibrating Screens . . . for Deister's exclusive features provide peak efficiency: (1) with Deister Opposed Elliptical Throw, the thick bed at the input end is quickly stratified, moved forward rapidly to spread the load, and held at the discharge end for maximum grading—while the oversize is discharged rapidly. (2) Longest possible operating life is provided through the Deister Unitized Lifetime Vibrating Mechanism, a precision-constructed, jig-assembled unit. Renewable sleeves prevent wear on bearing housings and shafts. Add Deister's Fully-Cushioned Vibration with specially-designed floating action, rugged construction for long life, and the new, exclusive adjustable screen panels at feed and discharge ends . . . and you have a few of the reasons why Deister Vibrating Screens screen *faster and cheaper . . . and last years longer.* Write Deister today for complete details.

DEISTER MACHINE COMPANY
1933 East Wayne Street, Fort Wayne 4, Ind.

For High Production...
Quality Performance...
Long Dependable
Trouble-Free Service...



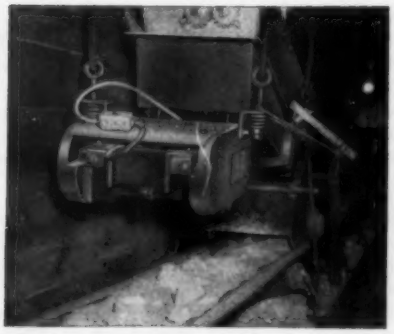


Feeding limestone to conveyor belt.

Use

SYNTRON **Vibra-Flow**

VIBRATORY FEEDERS



Feeding Rock to conveyor belt.

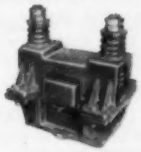
Syntron Vibratory feeders can handle almost any bulk material clay, coal, limestone or heavy rock at a controlled rate of feed in quantities to meet capacities of mullers, crushers, driers, screens, etc.

Syntron Feeders are ruggedly constructed to provide steady, dependable trouble-free operation, day after day. No wearing parts. Low maintenance cost.

Available with capacities from 1 Ton to 750 Tons per hour. Multiple or twin drives — flat pan or tubular troughs.

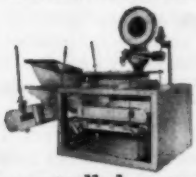
Other SYNTRON Equipment of Proven Dependable Quality

ELECTRIC VIBRATORS



Keep bulk materials on the move through hopper, bin and chutes. Fast, powerful, dependable. Sizes 4 to 1000 lbs.

WEIGH FEEDERS

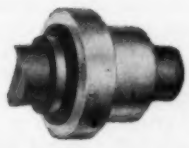


For controlled, accurate feeding by weight. Correct load variations automatically. Electronic controls.

GRIZZLY FEEDERS

For heavy tonnage feeding and coarse scalping of materials in one operation. Controllable speed.

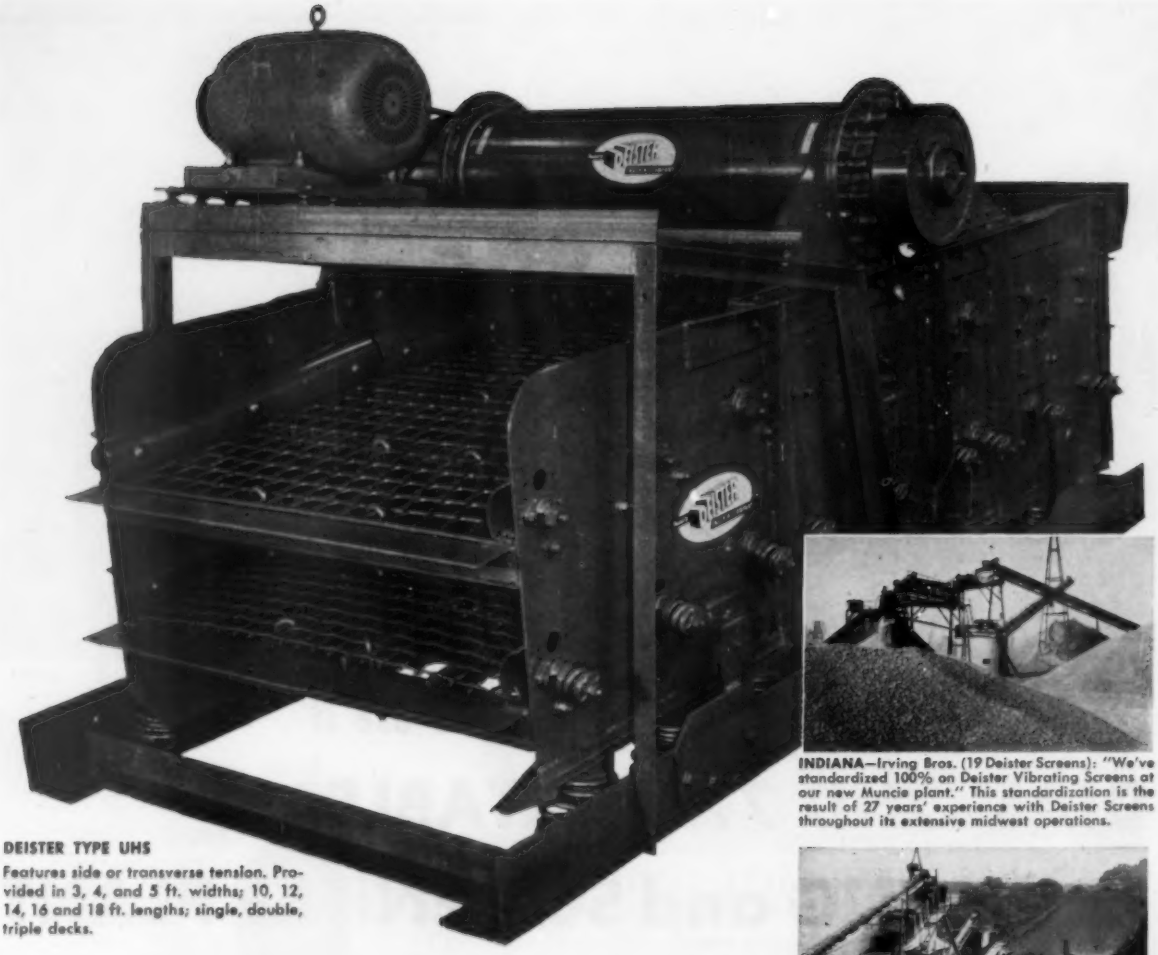
SHAFT SEALS



Self-lubricating mechanical seals for rotating shafts. Corrosion resistant.

Write for complete Catalogue Data—FREE

SYNTRON COMPANY
385 Carson Avenue Homer City, Penna.



DEISTER TYPE UHS
Features side or transverse tension. Provided in 3, 4, and 5 ft. widths; 10, 12, 14, 16 and 18 ft. lengths; single, double, triple decks.

INDIANA—Irving Bros. (19 Deister Screens): "We've standardized 100% on Deister Vibrating Screens at our new Muncie plant." This standardization is the result of 27 years' experience with Deister Screens throughout its extensive midwest operations.

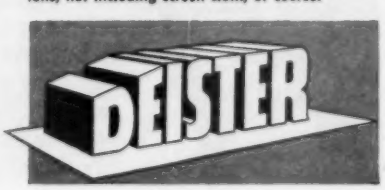
KANSAS—Kerford Quarries, Atchison, Kan., Amazonia, Mo., Ashland, Neb. (9 Deister Screens): "We have never seen screens perform any better or require less care. We haven't touched a Deister Screen bearing at Ashland since start of operation, April 1952."

NEW YORK—Sand and Gravel Division of East Coast Lumber Terminal, Inc., Farmingdale, N. Y. (4 Deister Screens): "3½ million tons of bank-run feed went over our first Deister in 8 years . . . maintenance averaged less than 29c per thousand tons, not including screen cloth, of course."

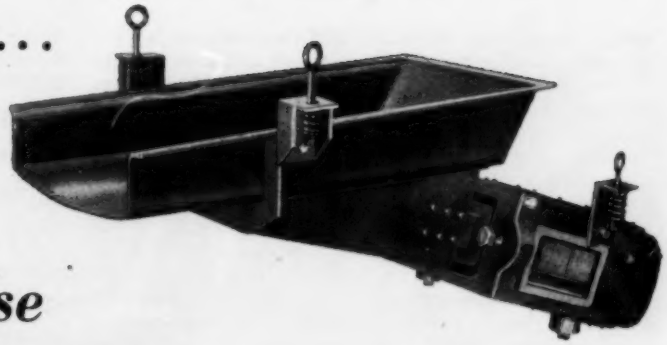
Deister owners report more tonnage to exact specifications

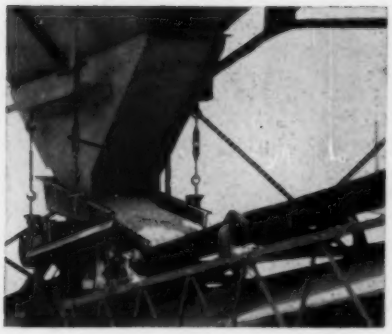
Specifications tougher? Competition keener than ever? Aggregates producers need all the screening efficiency they can get today. And here's why they're *getting* it with Deister Vibrating Screens . . . for Deister's exclusive features provide peak efficiency: (1) with Deister Opposed Elliptical Throw, the thick bed at the input end is quickly stratified, moved forward rapidly to spread the load, and held at the discharge end for maximum grading—while the oversize is discharged rapidly. (2) Longest possible operating life is provided through the Deister Unitized Lifetime Vibrating Mechanism, a precision-constructed, jig-assembled unit. Renewable sleeves prevent wear on bearing housings and shafts. Add Deister's Fully-Cushioned Vibration with specially-designed floating action, rugged construction for long life, and the new, exclusive adjustable screen panels at feed and discharge ends . . . and you have a few of the reasons why Deister Vibrating Screens screen *faster and cheaper . . . and last years longer.* Write Deister today for complete details.

DEISTER MACHINE COMPANY
1933 East Wayne Street, Fort Wayne 4, Ind.



For High Production...
Quality Performance...
Long Dependable
Trouble-Free Service...

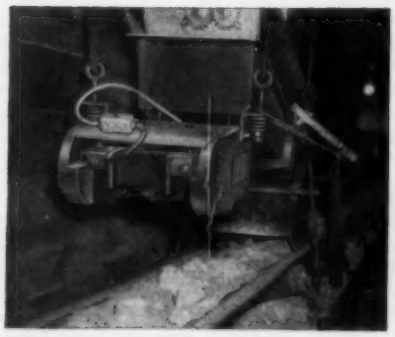




Feeding limestone to conveyor belt.

Use

SYNTRON Vibra-Flow
VIBRATORY FEEDERS



Feeding Rock to conveyor belt.

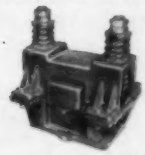
Syntron Vibratory feeders can handle almost any bulk material clay, coal, limestone or heavy rock at a controlled rate of feed in quantities to meet capacities of mullers, crushers, driers, screens, etc.

Syntron Feeders are ruggedly constructed to provide steady, dependable trouble-free operation, day after day. No wearing parts. Low maintenance cost.

Available with capacities from 1 Ton to 750 Tons per hour. Multiple or twin drives — flat pan or tubular troughs.

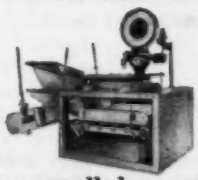
Other SYNTRON Equipment of Proven Dependable Quality

ELECTRIC VIBRATORS



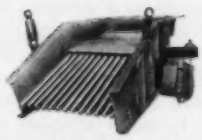
Keep bulk materials on the move through hopper, bin and chutes. Fast, powerful, dependable. Sizes 4 to 1000 lbs.

WEIGH FEEDERS



For controlled, accurate feeding by weight. Correct load variations automatically. Electronic controls.

GRIZZLY FEEDERS



For heavy tonnage feeding and coarse scalping of materials in one operation. Controllable speed.

SHAFT SEALS

Self-lubricating mechanical seals for rotating shafts. Corrosion resistant.

Write for complete Catalogue Data—FREE

SYNTRON COMPANY
385 Carson Avenue Homer City, Penna.

The Editor's Page

Pit and Quarry Industries Set New Records

THE nonmetallic minerals industries covered by PIT AND QUARRY, collectively and with a few exceptions, individually, had a record year in 1956. Prospects for 1957 are at least as good for most of these industries and collectively they should reach another new high. The aggregates and cement industries are in a particularly favorable position, due to the expanded road program, and should set new records each year for some years to come.

Again, in this January, 1957 Annual Review and Forecast Number of PIT AND QUARRY, we are attempting to provide our readers with the latest and most complete information available on conditions in the nonmetallic minerals industries, on developments affecting them, and on prospects for the future. As in past years, we have assembled all available information from government and other sources, from our records, and from questionnaires sent to thousands of aggregates producers in this field. This extensive survey is necessary for accuracy as Bureau of Mines figures for most of these industries are several years behind. The results of the 1954 Census of the Minerals Industries are now available but, because of the 2-year lag there, they can be used only as base figures from which to project 1955 and 1956 estimates.

Review As usual at this time, only partial information on the past year is available but this makes it certain that, collectively, 1956 was the biggest year in the history of these industries. Again this record volume was due largely to the increased volume of heavy construction which apparently carried with it to new records the three largest industries in the field—cement, sand and gravel and crushed stone—as well as some smaller industries.

According to authoritative sources the dollar volume of new construction in 1956 was about $44,100,000,000 and an estimated $16,500,000,000 was spent for maintenance and repair. The total of $60,600,000,000 exceeded the 1955 record total by about 3 percent, but this was more than offset by an increase of about 5 percent in construction costs. A decline in housing, and a shortage of structural steel due to a strike, probably also kept the physical volume of construction from setting a new record.

The portland cement industry in 1956 set new all-time records in production, shipments and value for the tenth consecutive year. Using Bureau of Mines reports for the first ten months of the year and estimates for the remainder we believe that production was up about 7 percent, shipments about 6 percent and value about 10 percent over the 1955 record levels, to about 318,000,000 bbl., 307,000,000 bbl., and $940,000,000, respectively.

Our estimates on the production of sand and gravel and crushed stone in 1956 should be more accurate than in any other recent year because of the 1954 Mineral Industries Census data which recently became available. This information was used as a base from which estimates were made for 1955 and 1956, these estimates in turn being based on the replies to questionnaires sent to several thousands of producers. There is no doubt that the production of sand and gravel, crushed stone and lightweight aggregates each set new all-time records in 1956 by substantial margins.

According to our estimates the sand and gravel industry in 1956 produced about 675,000,000 tons, more than 6 percent over the 1955 record volume (also estimated) of 635,000,000 tons. These figures include both commercial and non-commercial production and industrial sand.

Crushed stone production in 1956 is estimated to have been about 360,000,000 tons, an increase of about 3 percent over the record 350,000,000 tons (also estimated) produced in 1955. These figures include both commercial and non-commercial production, as well as agstone, but not the stone used in cement and lime manufacture. Agstone is believed to have gone up about 2,000,000 tons in 1956 to 23,000,000 tons.

The iron blast furnace slag industry in 1955 produced 32,438,017 tons for a new record. In 1956, however, output was probably down slightly due to the steel strike. As the industry now processes practically all the slag produced, its output is limited by steel production. Judging from this, output in 1957 should be up, perhaps as much as 10 percent, over 1956. The production of granulated and expanded slags in 1955—3,835,829 and 2,891,944 tons, respectively—were both up 11 percent over 1954, and further increases are indicated for 1956 and 1957.

There is no information later than 1954 for lightweight aggregates as a whole, but production is known to have continued its upward trend.

The production of other nonmetallic minerals as a whole may also have set a new record in 1956 but little information is yet available. Increases in production apparently were made by a number of industries and several, including lime and sulphur, probably set new records. The few industries known to have dropped off during the year did so by small margins.

Forecast Authorities do not fully agree on the construction dollar volume to be expected in 1957 but it seems certain that another new record will be set. New construction estimates average $46,900,000,000 and maintenance and repair is estimated at $17,000,000,000 for a total of $63,900,000,000, nearly 5 percent over 1956. Physical volume (expenditures adjusted for price changes) is expected to be up slightly from 1956, and to about equal the record set in 1955. A probable decrease in several types of construction, particularly housing, is expected to be more than offset by increases in others, particularly highway construction which is expected to really feel the effects of the expanded program during the latter part of the year. Nonresidential construction and state and local public works are also expected to gain.

The construction estimates indicate production gains in 1957 for the cement and aggregates industries and producers are optimistic. The demand for cement is expected by most companies to be up some in 1957 and to increase rapidly thereafter due to the road program. Aggregates producers in various parts of the country are largely optimistic and few of them expect any loss in business in 1957. The demand for lime and some other nonmetallic minerals is also expected to increase.

Walter E. Trauffer

Photo Courtesy Iowa Mfg. Co.

Keep engine efficiency up, COSTS DOWN

GET MORE WORK from your engines and spend less for their upkeep. Use the lubricant that gives extra protection—*Texaco Ursa Oil Heavy Duty.*

Texaco Ursa Oil Heavy Duty is especially made to assure ideal engine lubrication and cleanliness. It is carefully refined and de-waxed, then fortified with effective additives that step up the ability of this great oil to—

1. **Inhibit oxidation**
2. **Assure full detergency and dispersion**
3. **Prevent rust**
4. **Protect bearings**
5. **Withstand high pressure and temperature**
6. **Minimize wear**

Texaco Ursa Oil Heavy Duty is one of the complete line of *Texaco Ursa Oils*—all designed to make diesel and heavy duty gasoline engines deliver *more power* with *less fuel* over *longer periods* between overhauls.

For your air compressors, use *Texaco Regal Oil R&O.* It keeps systems clean, lines clear—assures dependable performance.

For wire rope and open gears, use *Texaco Crater* or *Texaco Crater X Fluid.* You'll keep rope strong longer, get better performance from your gears.

A Texaco Lubrication Engineer will gladly help you simplify and improve your lubrication. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN . . . METROPOLITAN OPERA RADIO BROADCASTS EVERY SATURDAY AFTERNOON

Washington News Letter

The Small Business Dilemma

By S. HERBERT UNTERBERGER

THE small business problem is a made-to-order propaganda device. Particularly in the next several years, when the Congress is dominated by one party and the Administration by another, we can probably look forward to its extended use. The Small Business Committees of both the Senate and the House always find themselves in the desirable position of being able to hold hearings which command substantial press coverage. The subject matter is also one that is almost certain to attract sympathetic public attention.

Whether the administration is Republican or Democratic, it is almost certain to be criticized for inadequate action. The Eisenhower Administration has been trying to accomplish results. Last spring the President appointed a special Cabinet committee on small business, with Dr. Arthur F. Burns, his chief economic adviser at that time, as chairman.

This committee labored for a while, and early in August, when the political campaign began to warm up, it issued a report. Its tone was rather soothing. It argued, principally, that although small business problems really do exist, small business in the United States is really not doomed, particularly in a prosperous economy; that there are many opportunities for firms of modest size to start and to grow.

The report offered no bold new program, but it did recommend certain types of tax relief; the reduction of reports and red tape; better methods of government procurement, which would assure small business a just share in the government's purchases; and finally, a stepped up anti-monopoly action. Except for the tax relief proposals, all of the other principal ideas suggested by the reports were already being worked on or had, in fact, been worked on for many years by various government agencies.

Since that time, not much has happened to alleviate the problems of the small businessman. As a matter of fact, there is strong evidence that the difficulties may have become more serious. The tightening of credit, so that it is now being rationed by the lending institutions, appears to have affected small businesses more seriously than larger firms.

The source of the trouble is not so much that the small businesses are unable to pay the increased interest rates, but rather that, when the banks have their choice about where to make a limited number of loans, they naturally and necessarily select the preferable risks, and for the most part these are the larger business enterprises. With this additiopal pressure on the Administration, it is likely that more action will be seen. The question is, what more can be done than has already been accomplished?

In part, the enemy of small business is big government. The increasing volume of paper work required by the Bureau of Internal Revenue, the Census Bureau, and the large number of other bureaus and commissions with which small businessmen (as well as big businessmen) must work and to whom they must report is no doubt a great harassment to the often inadequately staffed small business.

However, it is unlikely that this is the kind of burden which has driven the small man out of business. For many years the Budget Bureau has had the function of reviewing the requests for information made to all businessmen; it has been especially solicitous about this problem. However, it is always faced with the dilemma of whether to expose the small businessman to another survey or to veto the survey and expose him to the risks which result from not knowing much about his problems! No doubt something more can be done along the lines of simplification; but it is recognized in Washington that the heart of the problem does not lie there.

A far more important consideration is one that deals with the tax burden on small businesses. In this connection we are likely to see a Presidential recommendation for a reduction in the federal taxes on a corporation's first $25,000 of income. The present rate of 30 percent may be cut as low as 20 percent. It does not take higher mathematics to show that at most this reduction could amount to a saving of not more than $2,500 a year. While such savings are not to be disdained, it is also unlikely that the difference between success and failure for most small businesses is that narrow.

Other ideas that are being considered include permitting accelerated depreciation on used machinery purchases. Permitting death taxes to be paid over a period of up to ten years, so that it will no longer be necessary to liquidate or even weaken a small business for the sole purpose of paying the government its tax obligation is another possibility. Corporations with ten or fewer stockholders might also be given the option of being taxed as if they were partnerships, thus avoiding the necessity for paying both a corporation tax and later an individual income tax on the same earnings.

The President has asked more than once that the government procurement program be reviewed, so that an increased share would go to smaller business concerns. This has been attempted many times, but such an effort always runs into the same problems, namely that the kind of government procurement available does not really lend itself to efficient manufacture by small firms. It is obviously impossible to buy most military items such as guns, tanks, and airplanes from small firms since they are rarely engaged in these kinds of businesses. Furthermore, the usual requirement of awarding the government contract to the lowest bidder essentially precludes the smaller, less efficient businesses from getting the award although they may be able to make the product.

Finally some attempts will no doubt be made to loosen up the regulations of the Securities and Exchange Commission insofar as they apply to smaller businesses and to step up the anti-monopoly campaigns of the Justice Department. These are long-range programs and are un-

(Continued on page 47)

The BIG SCREEN for the BIG JOBS

ALLIS-CHALMERS SCALPING SCREEN

FIELD TESTED FOR 3 YEARS

- **Engineered to Handle the Toughest Job in Any Rock Products Flow**
- **Extra-Large Mechanism**

HERE'S an *extra heavy duty* screen built to take punishing loads coming from your primary crusher. Its rugged cartridge-type, oil-lubricated mechanism features giant bearings — the largest ever installed in a vibrating screen. The heavy I-beam and channel-constructed screen deck support frame can withstand impact of large pieces and high tonnage.

Reduced Maintenance — Simplified two-bearing cartridge mechanism can be pulled out after removing sheave and four bolts. Large size bearings mean extended life, less frequent replacement.

Vibration Isolation — Standard design includes multi-unit vibration *isolators* — two per corner, each with an inner and outer spring arrangement. Vibration to building or structure is isolated even when sticky materials adhere to the screen.

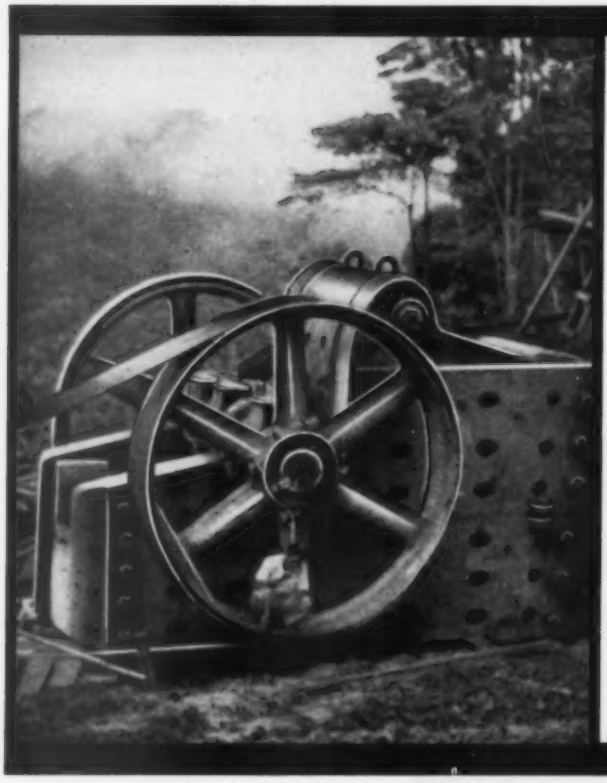
For complete information, see your A-C representative or write for Bulletin 07B8368, Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-5063

The Bowling Champ
buys a custom-made ball
because he gets
something **EXTRA**



the profit-wise stone producer

BUYS TRAYLOR JAW CRUSHERS for the same reason

For over half a century, rock producers have specified Traylor-made Jaw Crushers to insure extra hourly production with lower operating costs per ton. There are four types of Traylor-made Jaw Crushers to fit every primary breaking requirement. Feed openings range from 8″ x 12″ to 60″ x 84″; capacities from 4 to 1000 tons per hour. Write for Traylor Bulletin No. 11-120 containing complete descriptions and specifications.

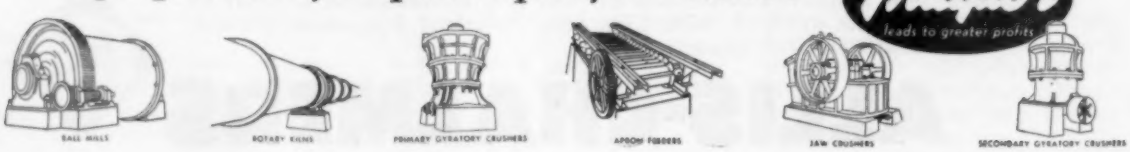
TRAYLOR ENGINEERING & MFG. CO.
905 MILL ST., ALLENTOWN, PA.
Sales Offices: New York—Chicago—San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.

the experts agree . . . there's nothing like

TRAYLOR-MADE

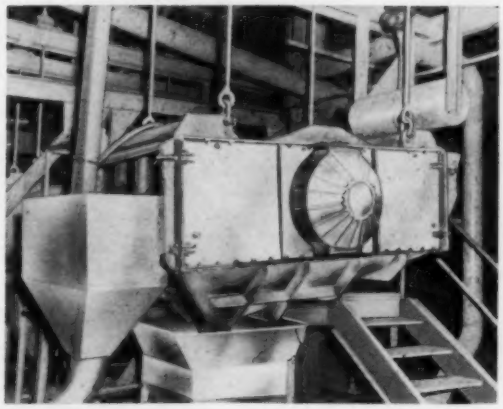
equipment for peak performance

A Traylor leads to greater profits



STEP UP
SIZING EFFICIENCY with
Gyroset Vibrating Screens

Specialists in SIZING and DEWATERING



Suspended Gyroset 3' x 6' scalping oyster lime slurry at 1/8" opening. For a large cement company.

5' x 8' special scalping screen with abrasion resistant liners—5" opening.

Complete Details sent on request

► POSITIVE ECCENTRIC ACTION
► POSITIVE STROKE ADJUSTMENT
► ONLY 2 BEARINGS

GYROSET Screens boost tonnages . . . insure uniformly sized materials . . . reduce production costs.

GYROSET Screens have a positive eccentric action giving a full circle throw over the entire screen surface. Using only two bearings, the eccentric action requires the fewest moving parts.

Equally effective for slurry scalping or any washing or dewatering operations, these machines can work at high speed at any degree of pitch (or slope). Easily adjustable for record output when rough scalping. Can be set for peak efficiency in grading or dewatering, with capacity exceeding any other scalping unit. Stroke adjustable from 0 to 3/8".

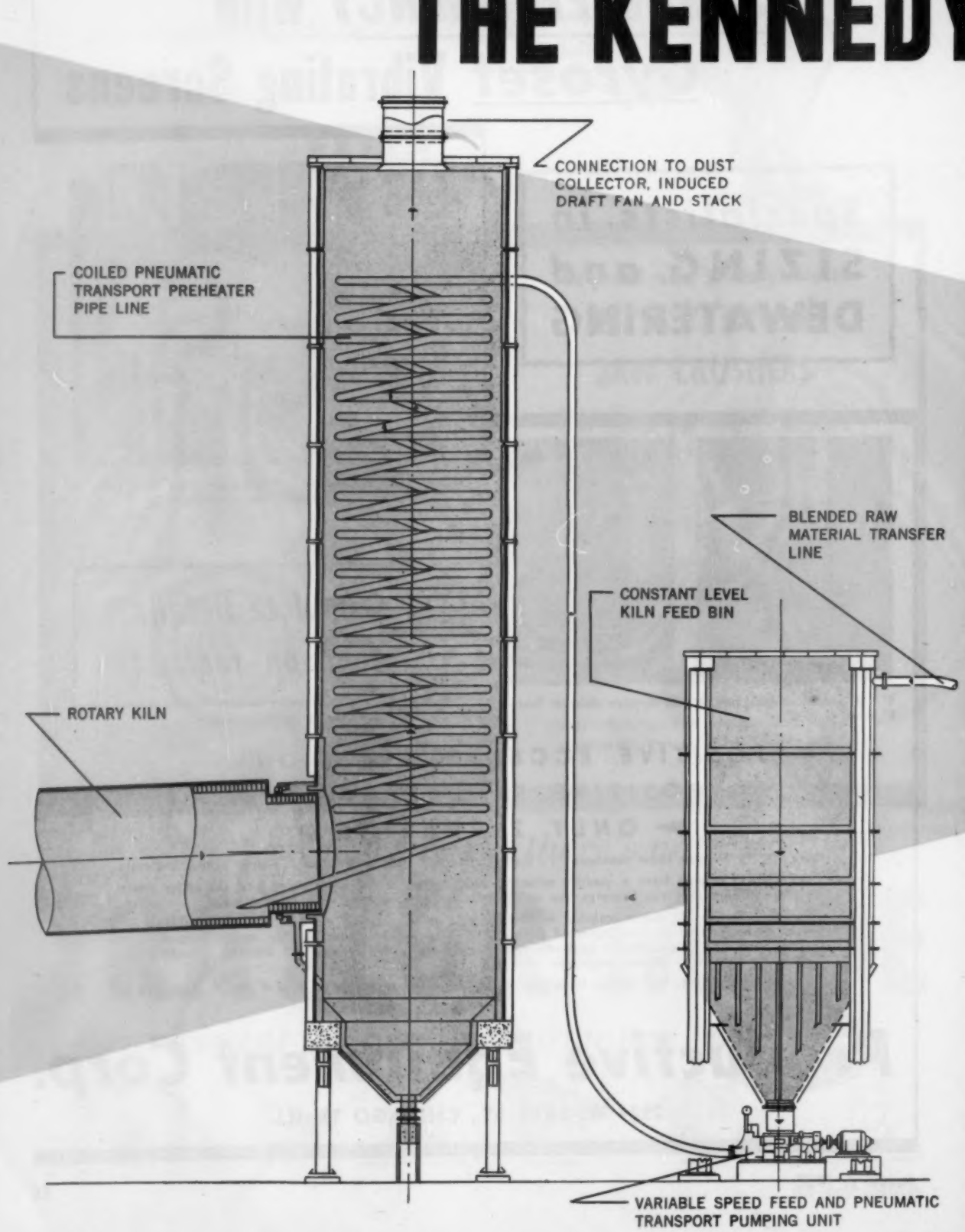
Simple construction, but flexible in action. Sizes from 18" to 72" wide, and 4' to 16' long, one to three decks.

Productive Equipment Corp.

2924 W. LAKE ST., CHICAGO 12, ILL.

A Sensational Advance in

THE KENNEDY


CONNECTION TO DUST COLLECTOR, INDUCED DRAFT FAN AND STACK
COILED PNEUMATIC TRANSPORT PREHEATER PIPE LINE
BLENDED RAW MATERIAL TRANSFER LINE
CONSTANT LEVEL KILN FEED BIN
ROTARY KILN
VARIABLE SPEED FEED AND PNEUMATIC TRANSPORT PUMPING UNIT

the Manufacture of Cement!

GRUDEX PREHEATER

MANUFACTURED EXCLUSIVELY BY KENNEDY-VAN SAUN

Produces Highest Grade Cement at Greatly Reduced Cost...

WHAT IT IS **A simple heat resisting coiled pneumatic transport system in a housing at the feed end of the kiln in which the dry fluidized raw material is preheated up to 1300°-1400° F. before entering the kiln.**

WHAT IT DOES **On short, dry process kilns, it reduces fuel consumption by as much as 40%, and increases output by as much as 40%!**

See It in Operation at Coplay Cement Mfg. Company, Coplay, Pa.

OUTSTANDING ADVANTAGES

1. **WIDE RANGE OF APPLICATION:** Can be used with any short dry process Portland Cement kiln. **No nodulizer required.**
2. **REQUIRES MINIMUM SPACE:** The Kennedy Grudex requires no more ground space than a conventional dust chamber, and can be installed on existing kilns.
3. **MINIMUM SUPPORTING STRUCTURE:** The unit requires no elaborate supporting structure. The kiln feed tank may be on the ground.
4. **LOW COST:** The Kennedy Grudex equipment costs far less than any other external type. It is simple to install and the cost is only about one-half of the cost of any other external type.
5. **ALKALI TROUBLE FREE:** As the raw material does not contact the kiln gases until entering the kiln in the conventional manner, the Kennedy Grudex System is free of the high alkali troubles of all other external types.
6. **NO DUST PROBLEM:** As the raw material is deposited in the kiln in the conventional manner there is no raw dust problem. As the raw material may be ground coarser, the dust loss is lower.
7. **LOW LABOR COST:** Only one man, one shift per day is required to lance the dust from the outside of the coils.
8. **LOW POWER COST:** The only power needed is for the transport pump and compressed air. Grinding power is saved as the raw material need be ground to only 80-82% through the 200 mesh screen. No feed screw is required.
9. **LOW MAINTENANCE:** Maintenance is low because there are no moving parts exposed to heat. The lower section of the transport pipe line lasts 10 years and the balance at least 20 years.
10. **OPERATIONAL DIFFICULTIES ELIMINATED:** With dual transport pumps, availability is 90-95%. The Kennedy Grudex introduces no new operational problems.

KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.

As fast as trucks on 9-mile cross-town trip . . .

Michigan Tractor Shovels handle all loading at 3 scattered pits

Suppose that sometime soon you have the same problem that 15 months ago faced A. Courchesne, Inc., El Paso (Texas) commercial rock firm. Business has boomed so much you find it profitable to work several locations at once. (In Courchesne's case, he started producing railroad ballast a mile from his main pit, and began crushing colored roof stone at another site nine miles from the pit.) Slow-moving crawler-loaders, you know, aren't practical for working at more than one location. Purchase of more crawlers costs more than you want to spend. So what do you do?

Do what Courchesne did and your problem is solved!

Performance earns repeat order

Courchesne traded a crawler-loader for his first Michigan, a 1⅜ yard Model 125A, 15 months ago. Its performance was so good that when business continued to boom, he bought another Michigan, both from local distributor Contractors' Equipment & Supply Co.

Output averages over 1,500 yards daily

Today, the two Michigans load 1,500 to 2,000 cubic yards of stone every 8 hour day. The owners say each *equals* a *1¼ yard power shovel* in output. Each works at three or four locations per shift, depending on customer re-

Michigan Tractor Shovel has ample power to load all the many kinds of stone produced at Courchesne's three pits . . . . . limestone flux for smelters . . . sand and concrete aggregates for building . . . slag ballast for railroads . . . gravel for water-well packing . . . crushed red, buff, green, and "glitter-white" stone (shown here) for built-up roof construction. The two Michigan Tractor Shovels combine to load 1,500 to 2,000 cubic yards per eight-hour day.

Three passes of Michigan's 1⅝ yard bucket heap the company's 5 yard dump truck. Despite rugged use, Owner Tom Courchesne reports both Michigans "amazingly trouble-free. And," he says, "these mobile units have let us gear our loading to the flexibility of our sales . . . something never before possible in the 69 years we've been in business."

quirements. And speed! According to General Superintendent Mike Barrueta, either Michigan can leave a pit together with the company's five-yard dump trucks, travel through city traffic on its own rubber, and be at the new loading site *at the same time as* the trucks. Power steering and smooth-acting four-wheel power brakes allow the Michigan Tractor Shovel to make full use of its 27 mph speed on concrete pavement, blacktop, cross-country trails, or on the pit floor.

Many other Michigan owners have similar speed and production advantages to report from their Tractor Shovels. The complete power-train—torque converter, non-stop power-shift transmission, shock-reducing planetary axles—was designed and built entirely by Clark, specifically engineered to give more useable speed, power and traction than you've ever seen on a rubber-tire tractor shovel. For proof, ask your Michigan distributor to demonstrate. You name the job . . . and the size Michigan you want to see, 1 yard, 1⅜ yard, 2¼ yard!

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 33, Michigan
Michigan is a registered trade-mark of

CLARK® EQUIPMENT

The Answer to Many Modern Pulverizing Problems

Here is specialized grinding equipment, built to handle your most unusual production jobs!

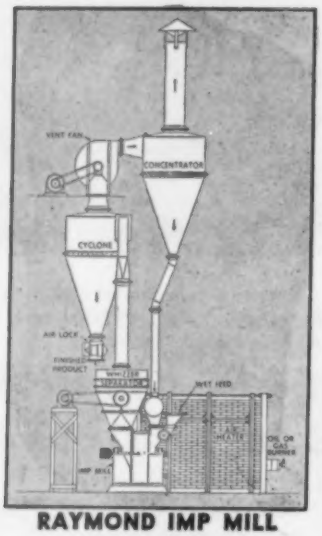
Raymond Imp Mills are compact, versatile units, combining whizzer air separation with a conveying system for handling the material automatically, without dust or waste, from feed hopper to finish bin in one continuous process.

For such operations as disintegrating, blending, classifying, cooling and/or drying . . . the Raymond method can be depended upon for economy and quality of product.

It provides close control over the fineness, dryness and uniformity of the finished material, so necessary in meeting today's strict specifications. Various types of clay, hydrate compounds, diatomaceous earth, pigments, phosphate materials, lime and gypsum specialty products are just a few of a wide range of Imp Mill applications.

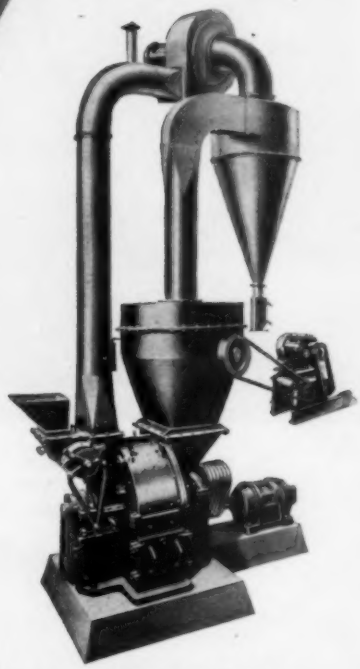
Tell us your requirements . . . and let us send you bulletins on Raymond equipment.

RAYMOND IMP MILLS



RAYMOND IMP MILL

Equipped with Flash Drying System for removing moisture while pulverizing



RAYMOND IMP MILL

with Whizzer Air Separator. One simple adjustment controls fineness classification over a wide range and insures uniformity of product

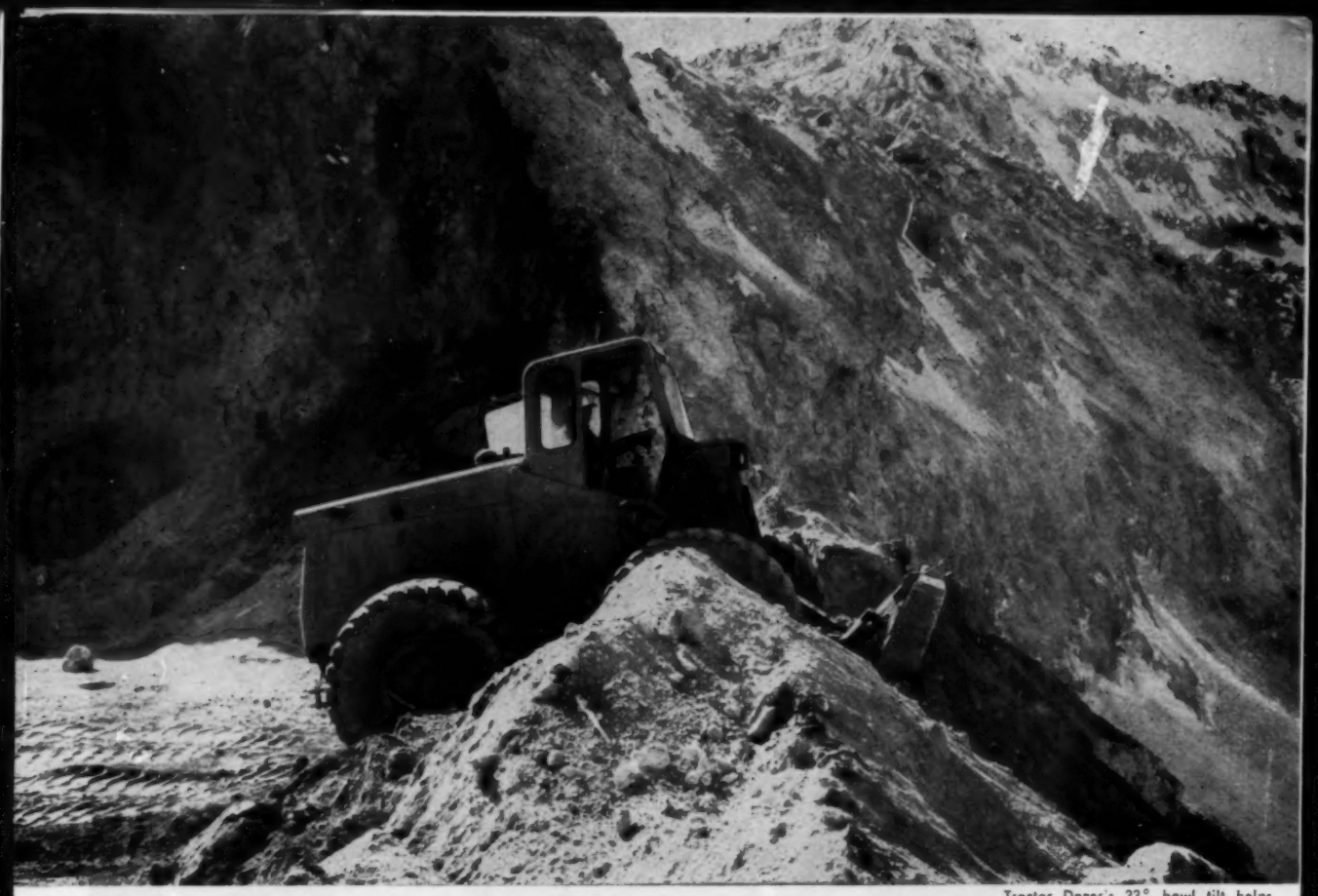
COMBUSTION ENGINEERING, INC.

Raymond Division

1321 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

Combustion Engineering-Superheater Ltd., Montreal, Canada

SALES OFFICES IN PRINCIPAL CITIES



Tractor Dozer's 33° bowl tilt helps speed ledge cleanup at Consolidated Copper's open pit near Ely, Nevada.

Before you buy <u>any</u> dozer...

Check Michigan Tractor Dozer's 27 mph speed, power-tilting bowl, full-time four-wheel traction

If you're in the market for any kind of dozer, be sure to check the new MICHIGAN Tractor Dozer before you buy. This job-proved unit dozes 2¾ cubic yards per pass. Its turbo-charged diesel engine develops 165 hp, with maximum rimpull of 28,000 lbs.—plenty for heavy-dozing, land-clearing, or push-loading. At 27 mph, it runs rings around any dozer on the market!

Full traction while turning. All four wheels of the Tractor Dozer are *always* driving, except when you declutch rear axle for highway travel. Rear-wheel steer eliminates unnecessary tire wear—you don't brake or drag inside wheels on turns. If one wheel begins to slip, a locking differential automatically applies power to wheel with firmest footing.

High flotation tires, oscillating axle. Big low pressure tires give the Tractor Dozer excellent ground contact in wet, dry, or sandy footing. You can cross railroad tracks or travel along ties or road bed; you can climb curbs and drive safely on any kind of road surface. On uneven terrain, the steering-wheel axle oscillates to keep both rear wheels in firm contact with the ground. With 14½ inches of ground clearance, it's practically impossible to get "hung up."

Power-shifting, 300% torque multiplication. Clark's power-shift transmission eliminates the conventional engine clutch and foot pedal—the most notorious cause of excessive maintenance and operator fatigue. With two fingertip levers on the steering column, operator can instantly shift between High-Low and Forward-Reverse—even when moving in either direction.

The 3-to-1 Clark torque converter gives a steady power flow, regardless of speed. As load gets heavier, torque output automatically increases up to 300% at stall speed—gives the extra torque to plow through the roughest spots. You can't stall the engine, and there's no clutch to slip.

Power-tilting bowl. Powerful double-acting hydraulic cylinder tilts bowl back and forth through 33 degree arc. You can change angle of bowl from "dig" to "float" as you work . . . move cutting edge back and forth to uproot stumps and boulders. Two 6-inch lift cylinders give tremendous lifting power and down-pressure—cutting edge raises from 24¼ inches below ground level to 43¾ inches above.

See Tractor Dozer in action—on your job. Write us to arrange a demonstration. You pick the work . . . then time cycles, measure output, compare price per yard of dozing capacity (don't forget MICHIGAN's f.o.b. price includes power-shift transmission, torque converter, planetary-wheel axles, and power-tilt blade . . . you don't have to pay for "extras" to get top efficiency). Or, if you'd like more details, before taking the time to watch a demonstration, ask us to show you a 20-minute color movie of the Tractor Dozer. No obligation, of course.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 38, Michigan

Michigan is a registered trade mark of

CLARK® EQUIPMENT

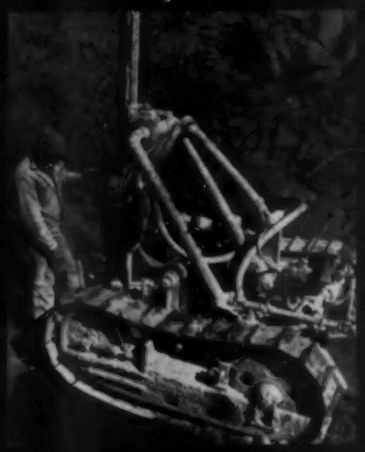
the G-800 TRACDRIL!

The self-propelled CP Tracdril pivots . . . moves forward or backward and can turn in its own length! "Tracdril" has a hydraulically actuated U-arm for fast drill carriage positioning. Can tow a 13,000 pound compressor up a 10% grade. Its "knee action" crawler tracks take rough terrain in stride. You save time moving from hole-to-hole, get more accurate spotting and gain productive drilling time.

here

there

everywhere



Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

News of the Industry

So. Lightweight Aggregate Building Third Solite Plant At Danville, Va., Location

Construction of the third Solite producing plant was recently begun for the Southern Lightweight Aggregate Corporation, Richmond, Va. The new plant is located near Danville, Va., along the North Carolina-Virginia border.

The firm has two other plants already producing Solite, one in Buckingham County, Va., and the other in Stanly County, N.C. With the completion of the new plant, the combined capacity of these three Solite plants will total over 1,000,000 cu. yd. per year.

During the last several years, the Southern Lightweight Aggregate Corp. has purchased numerous other deposits of minerals suitable for the production of Solite in other southeastern states.

French Cement Output Rising But Exports Show Decline

According to reports from the American Embassy in Paris, French cement production of more than 10,000,000 metric tons in 1955 was at an all-time high; but steadily declining exports are giving rise to concern.

Exports have dropped from 1,066,000 metric tons in 1953 to 766,961 tons in 1955, and this downward trend has continued in 1956. The decrease is due to a rising domestic demand, and also to the loss of some French Union markets abroad as a result of French efforts to develop oversea cement industries. Morocco is now almost self-sufficient, Algeria requires only a small supplement to its own production, and Tunisia's plants are producing in excess of its needs. France has lost the Indochina market to Japan, and a sizable part of Near East requirements were met by Soviet bloc countries in 1955.

As the fourth-largest cement producer in Europe, France must export 10 to 12 percent of production. The government has therefore approved the formation of CIMFRANCE (Common Sale of Cement for Export), a commercial company representing virtually all cement exporters, which will co-ordinate export efforts, study and develop foreign markets, facilitate exports and handle publicity.

Bituminous Concrete Assn. To Hold 2nd Annual Meeting

The second annual convention and business meeting of the National Bituminous Concrete Association will be held at the Conrad Hilton Hotel, Chicago, from January 31 through February 2, 1957.

Several nationally-known speakers will be included in the program, and the symposium and panel discussions will be led by outstanding specialists, technicians, and engineers in the bituminous paving field.

These meetings will follow the formal portion of the American Road Builders' Association's 55th annual convention.

World's Safety Record Set by Lockport Plant Of Material Service Corp.

Employees of the Lockport sand and gravel plant of the Material Service Corporation, Chicago, have been awarded Certificates of Merit by the U.S. Bureau of Mines for setting a world's safety record in winning the Bureau's 1955 National Safety Contest for Sand and Gravel Plants.

The plant has had 1,022 consecutive work days without a single lost-time accident. This is the equivalent of 500,000 man-hours free of disabling accidents. At the presentation it was noted that the continuing record has already surpassed the previous one by 115,000 man-hours.

Coming Events

January 15-17, 1957 — Miami Beach. 40th annual convention, National Crushed Stone Association. Americana Hotel.

January 17-18, 1957—Dearborn, Mich. Plant operators' meeting, National Slag Association. Dearborn Inn.

January 22-23, 1957—Washington. Annual convention, National Agricultural Limestone Institute, Inc. Statler Hotel.

January 24, 1957—Washington. Annual convention, National Crushed Limestone Institute. Statler Hotel.

January 27-30, 1957 — Chicago. 38th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 28-February 2, 1957 — Chicago. 55th annual convention, American Road Builders' Association, Convention and Road Show. International Amphitheater.

February 11-14, 1957 — Los Angeles. 41st annual convention, National Sand and Gravel Association and 27th annual meeting, National Ready Mixed Concrete Association. Statler Hotel.

February 24-28, 1957 — New Orleans. Annual Meeting, American Institute of Mining, Metallurgical and Petroleum Engineers. Roosevelt Hotel.

February 25-28, 1957—St. Louis. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

February 25-28, 1957 — Dallas. 53rd annual convention, American Concrete Institute. Statler-Hilton Hotel.

March 5-9, 1957 — Washington D. C. 49th annual convention, American Concrete Pipe Association. Shoreham Hotel.

June 6-8, 1957 — Colorado Springs. Annual convention, National Lime Association. Broadmoor Hotel.

Edward H. Robie of A.I.M.E. Retires After 25 Years In Secretarial Capacities

After serving for 25 years in official capacities with the American Institute of Mining, Metallurgical, and Petroleum Engineers (A.I.M.E.), Edward H. Robie has retired as secretary emeritus. A member of A.I.M.E. since 1919, Mr. Robie became assistant secretary in 1932, secretary in 1949, and secretary emeritus in 1955.

Mr. Robie is editor of a supplement to *The Porphyry Coppers,* by A. B. Parsons, which will be known as *The Porphyry Coppers in 1956,* to be published in 1957. He is editor-in-chief of a new volume on mineral economics scheduled for publication in 1958.

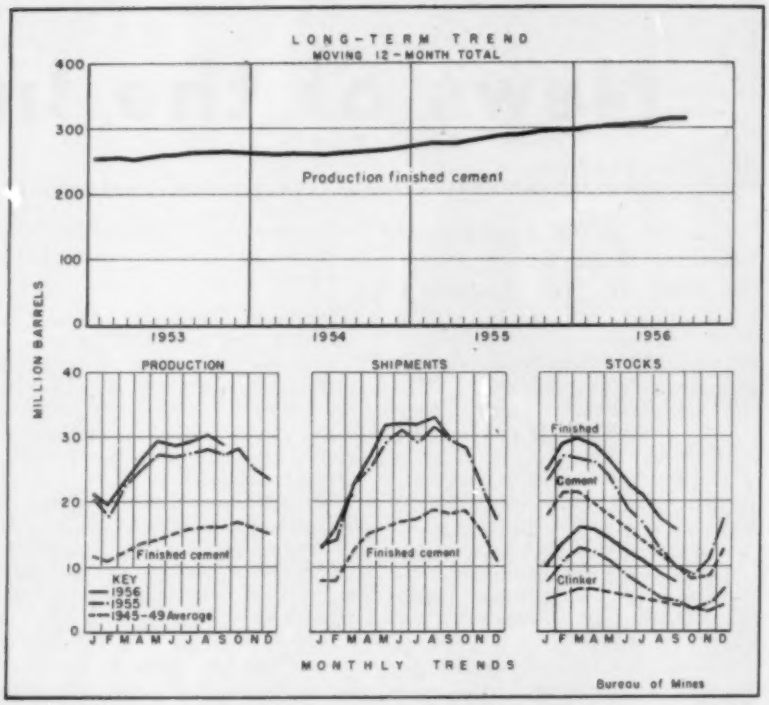
Edward H. Robie

A graduate of the University of Michigan with the degree of Bachelor of Chemical Engineering, Mr. Robie's early career was with the Canadian Copper Company and International Nickel Corporation before he became assistant editor and later associate editor of the *Engineering and Mining Journal.* He also served as associate editor of the *Engineering and Mining World* and of *Metal and Mineral Markets.*

New Mineral Wool Sources Found by Bureau of Mines

Tests made by the U.S. Bureau of Mines indicate that raw materials available in Alaska, Florida, Texas, and Virginia are suitable for making mineral wool insulation and similar products.

Among the materials tested were limestone and shale from Alaska; phosphate slag, staurolite, clay, limestone, and silica sand from Florida; tin slag from Texas; and slates from Virginia. Mineral samples from these regions were used in wool-blowing experiments at the Bureau's Mississippi Valley Experiment Station at Rolla, Mo.



SUMMARY—Production of finished portland cement in September, 1956, as reported to the U. S. Bureau of Mines, totaled 28,643,000 barrels, an increase of 6 percent over the September, 1955, figure. Mill shipments in September, 1956, totaled 29,935,000 barrels, an increase of 1 percent over the September, 1955, figure. Stocks of 15,538,000 barrels of finished portland cement on hand September 30, 1956, were 59 percent more than that on hand September 30, 1955. Clinker production during September, 1956, totaled 27,324,000 barrels, an increase of 6 percent over the September, 1955, figure.

PRODUCTION—One hundred and sixty (160) plants in 37 states and Puerto Rico reported a production of 28,643,000 barrels of finished portland cement during September, 1956, compared to 26,958000 barrels in September 1955.

Clinker production during the month of September, 1956, was 27,324,000 barrels, compared to 25,892,000 barrels in September, 1955.

High-early-strength portland cement produced during September, 1956, totaled 819,000 barrels, an increase of 8 percent over the 756,000 barrels produced in September, 1955.

Prepared masonry cement produced in September, 1956, totaled 1,297,000 barrels, a decrease of 0.4 percent from the 1,302,000 barrels produced in September, 1955.

SHIPMENTS—Mill shipments of finished portland cement for September, 1956, totaled 29,935,000 barrels, compared to 29,543,000 barrels in September, 1955.

In September, 1956, thirteen (13) districts showed an increase in shipments over September, 1955, and ten (10) districts showed a decrease. The greatest increases were in the eastern Pennsylvania-Maryland, Louisiana-Mississippi, and Puerto Rico districts. The greatest decreases were in the Virginia-South Carolina, Wyoming-Montana-Idaho, and Oregon-Washington districts.

Mill shipments of high-early-strength portland cement in September, 1956, totaled 1,068,000 barrels, an increase of 5 percent over the 1,013,000 barrels shipped in September, 1955. Nearly half of these shipments were from mills in two districts, eastern Pennsylvania-Maryland, and Michigan. No shipments were made from mills in Puerto Rico.

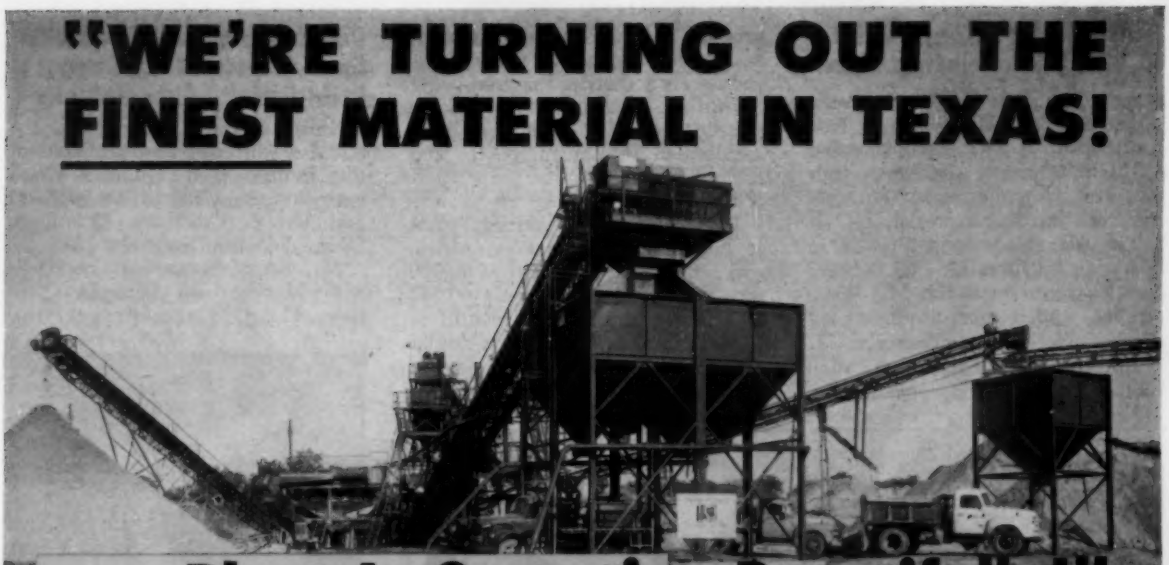
Mill shipments of prepared masonry cement in September, 1956, totaled 1,389,000 barrels, a decrease of 10 percent, compared to the 1,551,000 barrels shipped in September, 1955. Nearly two-thirds of these shipments were from mills in the northern states east of the Mississippi River.

STOCKS—Mill stocks of 15,538,000 barrels of finished portland cement were on hand September 30, 1956—59 percent more than the 9,779,000 barrels on hand September 30, 1955. Stocks of clinker on hand September 30, 1956, totaled 7,838,000 barrels, an increase of 78 percent over the 4,413,000 barrels on hand September 30, 1955.

MISCELLANEOUS—The long-term moving trend in the production of finished portland cement is shown in the chart. Total production during the twelve months ending September 30, 1956, was 313,004,000 barrels. Monthly production, shipments, and stock on hand for 1956, 1955, and the 1945-49 monthly averages are also shown on the chart.

Two new cement plants are expected to increase Mexico's output by 200,000 tons during 1957, bringing total annual production to 2,300,000 tons. In 1948 Mexico's cement output totaled 500,000 tons.

"WE'RE TURNING OUT THE FINEST MATERIAL IN TEXAS!



. . . Plant Is Operating Beautifully!"

Says Bill Boorhem, Production Manager of Wesco Materials Corp., Dallas, Texas, Whose New Circle No. 1 Plant Is Their Second to be Equipped With EAGLE Washing-Classifying-Dehydrating Equipment!

Yes, when a successful firm like Wesco installs a second round of *Eagle Equipment* at a new plant you can be sure they are right and that the equipment is right.

The Eagle Complete Washing-Classifying-Dehydrating Section at Wesco's Circle #1 Plant consists of a 20′ Water Scalping-Classifying Tank with power-operated bleeder valves and triple compartment collecting-blending flume, a 36″ dia. x 25′ Double Screw Fine Material Washer-Classifier–Dehydrator and a 36″ dia. x 25′ Single Screw unit, producing concrete sand and mason sand. A 36″ dia. x 30′ Log Washer processes gravel for specification aggregate. Output averages 2500 yds. per day.

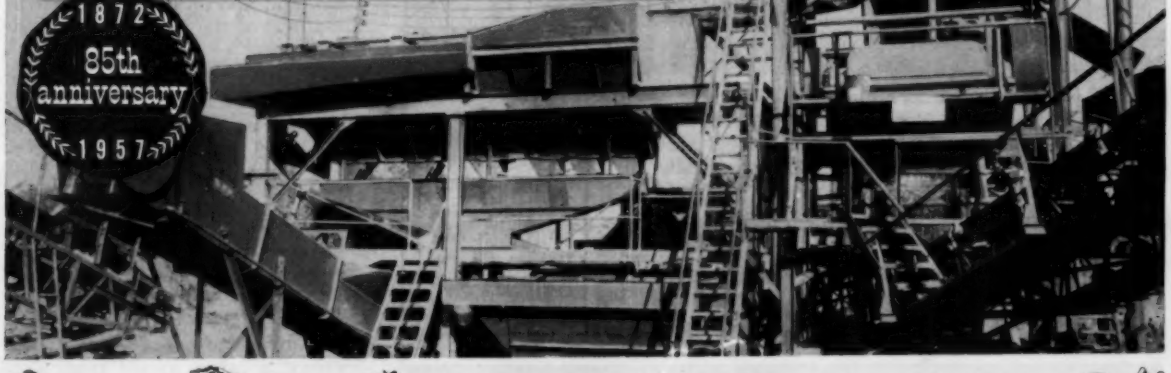
46% of Eagle installations are *re-orders* by satisfied customers. Plan your *first* installation today! Reap the benefit of Eagle's field experience and specialized engineering services.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

1872 85th anniversary 1957



FINE MATERIAL WASHERS

WATER SCALPING—CLASSIFYING TANKS

COARSE MATERIAL WASHERS

LOG WASHERS

"SWINTEK" DREDGE LADDERS

COMPLETE DREDGES

BREAKER BALLS & PILE HAMMERS

Flintkote Co. Constructing $1,000,000 Insulation Plant At 30-Acre Indiana Site

The Flintkote Company, East Rutherford, N. J., is constructing a $1,000,000 factory at North Judson, Ind., for the maunfacture of Insulrock building material.

The plant is expected to be in operation by June, 1957. It is being constructed to serve the Mid-Western area and to meet the increasing demands for this building slab.

Insulrock is used for combination roof decks and ceilings, floor slabs, structural insulation, interior sheathing, stucco base, interior plaster base, and as an acoustical material.

Flintkote has two other plants already producing Insulrock. They are located in Linden, N. J., and Richmond, Va.

Production of the cement plant at Lobito, Portuguese West Africa, which has a rated capacity of 90,000 tons per year, totalled only 40,643 tons during the first six months of 1956. A second plant, with a similar capacity, is under construction at Luanda.

DUST *was a problem*

50 TONS of DUST discharged in 24 hrs.

"Headache" for producer of lightweight aggregate.

Dust Problem Licked!

OVER 90% free of effluent dust

Producer and community both happy!

"SEEING IS BELIEVING"—the above before-and-after views amply prove the efficiency of Southern's new wet type dust collector.

We had a "king size" problem in our own plant, making lightweight aggregates for the building trade. Extreme heat plus corrosive and abrasive action caused a 50,000 c.f.m. offensive effluent from six stacks. Naturally our neighbors complained!

We tried a lot of collectors, but all failed to stand up against the combination of heat, acids and corrosion.

Finally we designed and built our own—it has passed every test for effectiveness and durability in controlling atmospheric pollution.

If you have a similar problem, contact us for full information without obligation.

SOUTHERN LIGHTWEIGHT AGGREGATE CORPORATION
Process Engineering Division • Box 9138, Richmond 27, Va.

Death of Russell S. Rarey Ends Outstanding Career In Industry, Associations

Russell S. Rarey, chairman of the board of directors and president of the Marble Cliff Quarries Company and the affiliated Arrow Sand and Gravel Company, Columbus, Ohio, died on December 10.

Mr. Rarey began his association with Marble Cliff Quarries Company 45 years ago, progressing

Russell S. Rarey

through various positions to head the company. For many years he served as treasurer and president of the Ohio Crushed Stone Association; and during the period of the National Recovery Administration in 1934-1935 he was chairman of the Ohio region for crushed stone, sand and gravel, and slag producers. He was a past president (1934-1935) of the National Crushed Stone Association, and also an active member in the affairs of the National Lime Association.

Mr. Rarey represented his firm, the Arrow Sand and Gravel Company, in both the National Sand and Gravel Association and the National Ready Mixed Concrete Association, as well as in the Ohio Sand and Gravel Association and the Ohio Ready Mixed Concrete Association.

The Chattanooga Rock Products Company, Chattanooga, Tenn., has received a safety award from Employers Mutuals of Wausaw for working 500 days without a lost-time accident.

Asarco Drains Black Lake To Reach Asbestos Deposit For Mining by Subsidiary

According to a recent report issued by Asarco, American Smelting and Refining Company of New York, this firm is spending $32,000,000 to develop its Lake Asbestos properties in Canada in a most unusual mining venture.

To reach the ore bodies lying 70 to 200 ft. beneath Black Lake in Quebec Province, Asarco is draining the lake, which is 2 miles long and ½ mile wide. Approximately 1,000,000 cu. yd. of silt, clay, and sand are pumped out each month. When the water and overburden have been removed, mining of the ore will be undertaken by Asarco's subsidiary, Lake Asbestos of Quebec, Ltd., by the open-pit method.

Work has started on the construction and equipping of a $9,000,000 milling plant which is to contain the most modern production and quality control facilities.

It is estimated that approximately 5,000 tons of ore will be processed each working day at the Lake Asbestos plant, and annual output of asbestos fiber will be from 95,000 to 100,000 tons. Nearly 17,000 ft. of underground headings and 100,000 lineal ft. of exploratory diamond drilling were completed on the property to determine the extent and quality of the ore body. Proved reserves are sufficient to support the proposed mill output for at least 40 years.

Twelve Cement Facilities Being Erected in Turkey

According to news from Turkey, cement production in that country will reach a new high when 12 new plants being built by the Turkish Cement Industry Corporation will add 1,150,000 tons per year to the present volume of 1,530,000 tons turned out by existing facilities.

Several of the plants are now ready for the installation of equipment, and all are expected to be completed within the next two years at a total cost of about $79,100,000. Of this sum $32,500,000 will be in foreign exchange for the purchase of equipment and machinery from abroad. Turkey will repay the load in installments of approximately $6,500,000 annually.

Important savings in foreign exchange will be effected by this plant construction program, since cement requirements in Turkey have skyrocketed within the last seven years. Domestic cement production will obviate the steadily increasing volume of imports, which rose from $712,000 in 1949 to $18,530,000 in 1955.

Increased home production will also expedite the completion of Turkey's large-scale programs for highway, harbor, and hydro-electric power station construction.

In a spectacular fire at Amherst, Ohio, the planing mill of the Cleveland Quarries Company was recently destroyed, at a loss of $100,000. The origin of the fire was not known. Products of Cleveland Quarries are crushed stone and refractory sand.

Salisbury Portland Cement To Open S. Rhodesia Plant For Early '57 Production

At Manresa, 12 miles from Salisbury, Southern Rhodesia, a plant erected by the Salisbury Portland Cement Company is scheduled to go into production early in 1957.

When full production has been attained, the plant will have a capacity of 130,000 tons annually; but the installation is so designed that this volume can be doubled when it becomes necessary.

Limestone for cement production will be obtained from a quarry opened recently at Sternblick.

TRANSALL BELT CONVEYORS

PERFECTERS OF THE PRE-LUBRICATED CONVEYOR IDLER

Transall TRAN-SEAL Idler Bearings are permanently lubricated and sealed at the factory. They are SERVICE PROVEN, never need relubrication. The lubricant is sealed in, dirt sealed out. No grease leaks to shorten belt life. Bearings and belt give longer service.

Send for our new belt conveyor Bulletin #915.

TRANSALL, Inc.

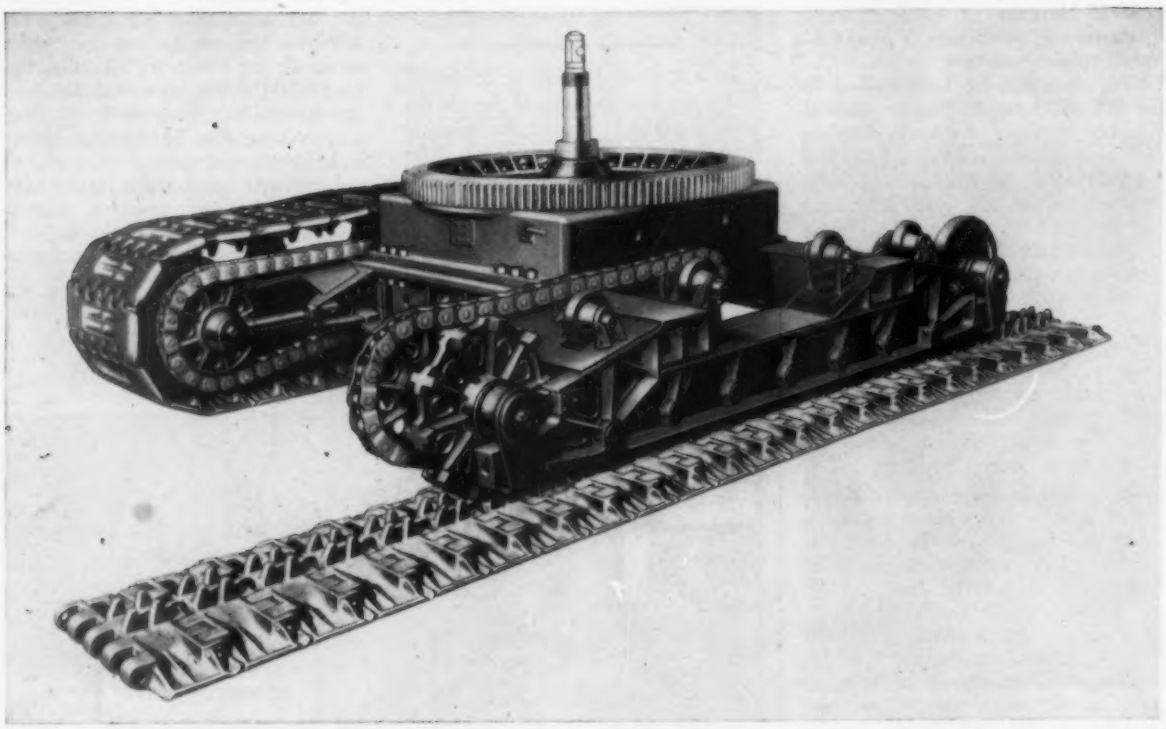
MANUFACTURERS - ENGINEERS - FABRICATORS - ERECTORS

108 No. 11th St. BIRMINGHAM, ALA. Phone AL 1-9204

Thew Shovel says:

"JEFFREY CHAIN suits our rigid requirements to a T*"

*T for Thew, of course.



Preparing a shovel crawler for final assembly, showing Jeffrey STR drive chain.

THE BEST evidence of the quality of a product is the company it keeps. Jeffrey is proud that its chain is selected for powering drives on many power shovels. The quality of the product makes the difference.

Whether your requirements are for power transmission or conveyor service, there's a Jeffrey chain best suited for your purpose. Our engineers will help you select the chain you need.

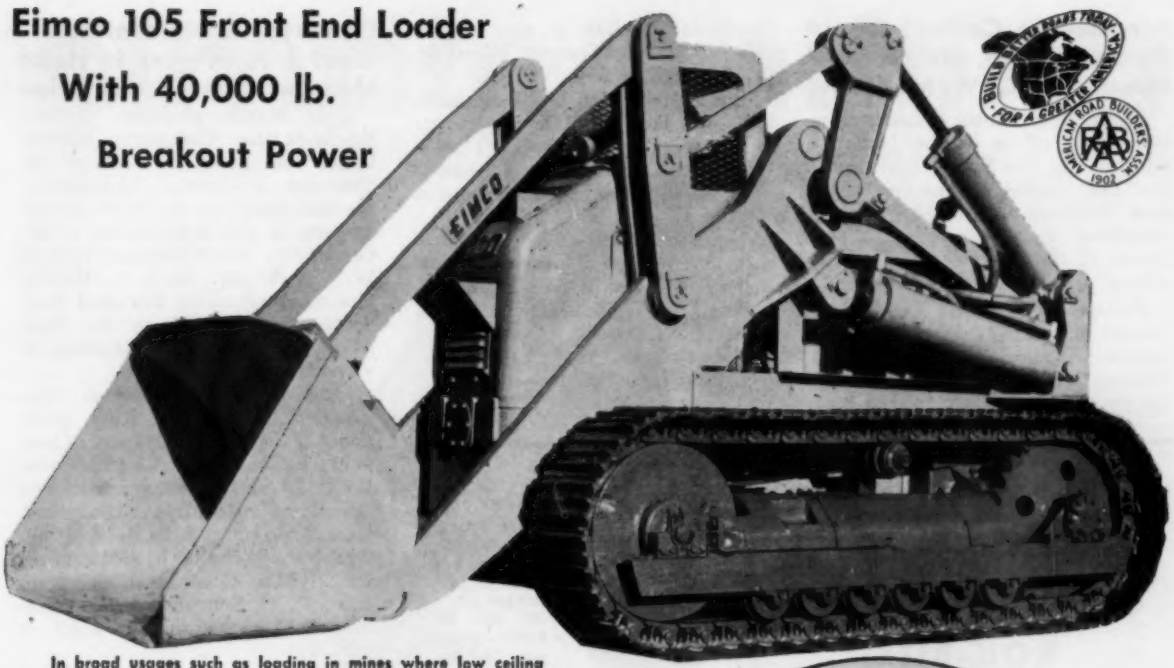
THE JEFFREY MANUFACTURING CO., COLUMBUS 16, OHIO

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

Below: Model 85 Lorain Shovel by Thew.

Eimco 105 Front End Loader With 40,000 lb. Breakout Power



In broad usages such as loading in mines where low ceiling prevents overhead discharge . . razing brickwork in open hearth furnace slag pockets . . . cutting smooth grades where fine control is required . . loading into haulage equipment where high discharge is necessary . . loading into light units or handling fine, dusty and wet material where controlled discharge is desirable . . . loading around wharves, docks, railroad yards (with fork lift attachments) . . . the 105 fills industry's requirements for a rugged, extra heavy-duty front end loader.

NOW! EIMCO HAS TWO RUGGED LOADER ASSEMBLIES

Productive scope of the Eimco 105 Crawler-Tractor has been broadened again by development of a heavy-duty Front End Loader.

For the first time, this provides the earth-moving industry with a machine that can utilize two unique loading attachments . . . each employing entirely different operating principles for jobs where physical conditions make the use of one advantageous over the other.

Since introduction of the 105, heavy construction industries in all parts of the world have praised the digging and loading speed of Eimco's rugged Rocker Arm Excavating Loader.

Like this and all Eimco equipment, the Front End Loader reflects years of constant development combining research with practical field experience.

Exclusive features of the hydraulic system provide an extra margin of protection against mechanical delays and the torque converter transmits maximum power from engine to boom and bucket cylinders for powerful digging effort at the bucket lip.

EIMCO 105 EXCAVATOR

All attachments (including bulldozer assemblies) are Eimco-built to standard SAE mounting dimensions for the basic 105 Tractor. This means that you get extra performance from every attachment through operating ease, maneuverability and visability . . . permits you to increase your earning potential without the addition of specialized machinery.

Each of these dirt-moving tools gives you new production and profit opportunities well worth investigating. Do this today by writing The Eimco Corporation for full particulars.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-236

Permanente Cement Co. Opens S. Calif. Div. Office—Headed by C. W. McKinley

Permanente Cement Company has established offices in the National Oil Building, 609 South Grand Avenue, Los Angeles, for the staff of its new Southern California Division, according to a release issued by James K. Beatty, vice-president in charge of sales.

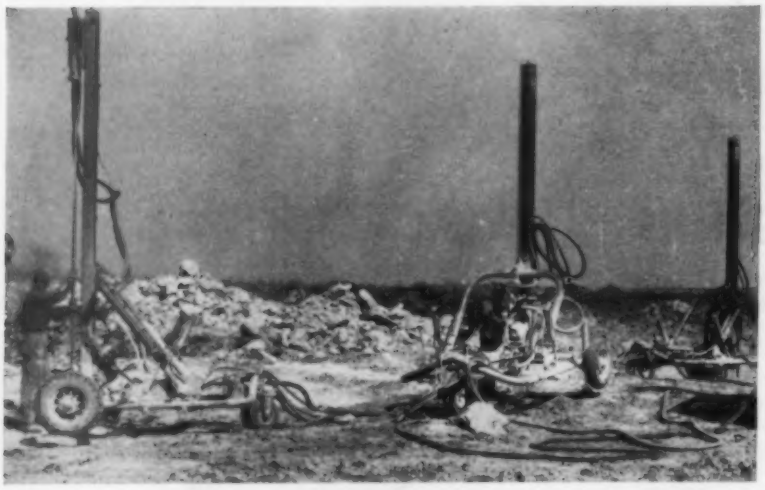
Permanente's new 2,500,000-bbl. cement manufacturing plant at Lucerne Valley, San Bernardino County, Calif., is scheduled to begin production in early 1957. A bulk distribution facility is now under construction at Corona, Riverside County.

The new division will be headed by C. W. Pete McKinley, a veteran of 11 years in Permanente's sales force, who has been appointed southern California division sales manager.

Other members of Permanente's new Southern California Division include the following: Frank Barker, assistant sales manager; Charles de Curtoni, credit manager; and David Graham, traffic supervisor. Charles Frazer will handle public relations.

AGGREGATES FOR KANSAS TURNPIKE quarried with Brunner & Lay ROK-BITS.

Carbide Rok-Bits—cross, chisel, "X", cut-away, taper socket bodies—standard, J-7.50; 200; 400; 600 types—gauge sizes: 1¾" thru 6".



Alloy or carbon drill steel—hex, round, extension steel, adapters, etc.

Distributor: Martin Tractor Company, Topeka, Kansas.

Aggregate production for the Kansas Turnpike called for a 1,500,000 ton one season run. Wagon drills equipped principally with Brunner & Lay Rok-Bits® put 3½" blast holes down through the 20-ft. limestone ledge. Rok-Bits gave increased drilling speed, greater footage life, fewer bit changes and lowest cost per foot of hole drilled which all added up to lowest cost per ton of aggregate. Jobs that call for top production, call for Brunner & Lay Rok-Bits. Put their cost-cutting features to work for you. Write for new catalog #756.

Brunner & Lay Products

Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. • Brunner & Lay Rock Bit of Philadelphia, Inc., 2514 East Cumberland St., Philadelphia 25, Pa. • Brunner & Lay of Los Angeles, Inc., 2425 East 37th St., Los Angeles 58, Calif. • Brunner & Lay, Inc., 150 Leslie St., Dallas, Texas • Brunner & Lay Rock Bit of Asheville, Inc., Sweeten Creek Rd., Asheville, N.C. • Brunner & Lay of Portland, Inc., 660 N. Tillamook St., Portland 12, Ore. Birmingham Rock Bit Co., Inc., 5-18th St., S.W., Birmingham, Ala.

Conveyor Equipment Men Elect J. H. Walker to Head Manufacturing Association

J. H. Walker, president, Fairfield Engineering Company, Marion, Ohio, was elected president of the Conveyor Equipment Manufacturers Association at the 23rd annual meeting of this organization at the Greenbrier, White Sulphur Springs, W. Va. He succeeds E. E. Boberg, vice-president, sales, Standard Conveyor Company, North St. Paul, Minn. Mr. Boberg will continue to serve as a director.

Other officers are as follows: vice-president, Adrian W. Rich, president, Fairmont Machinery Company, Fairmont, W. Va.; treasurer, H. E. Murken, manager, conveyor sales, Hewitt-Robins, Inc., Stamford, Conn.; secretary, J. B. Nordholt Jr., president, Webster Manufacturing, Inc., Tiffin, Ohio; and vice-president, R. C. Sollenberger, Washington, D.C., veteran staff head of C.E.M.A.

Directors named include L. J. Johnson, general sales manager, Mathews Conveyor Company, Ellwood City, Pa.; R. Y. MacIntyre, manager, sales development, Continental Gin Company, Birmingham, Ala.; and Frank J. Shude, president, Anchor Steel & Conveyor Company, Dearborn, Mich.

The next annual meeting of the association will be held at Point Clear, Ala., from October 12-15, 1957.

Stone, Stone Products Firms Operate 269 Credit Unions

Employees in the stone and stone products industry recently formed three new credit unions, the Credit Union National Association (C.U.N.A.) reports. They are: Stoneport Employees Credit Union, Alpena, Mich., for the 220 employees (active and retired) of the Presque Isle Corporation and their families; Employees of the Albuquerque Gravel Products Company Credit Union, Albuquerque, N. M. — 100 employees; and LeHigh Oglesby Employees Credit Union, Oglesby, Ill., for 310 employees of the LeHigh Portland Cement Company.

Employees of these concerns formed the credit unions to encourage thrift and regular saving, and to provide personal loans for one another at low cost. The credit unions are owned and operated entirely by their members under government charter.

Employees in the stone and stone products industry now operate 269 credit unions, according to C.U.N.A.

simple shifting

means

1 proper use of all available gear ratios

2 easier handling rigs; better maneuverability

3 reduced driver fatigue; safer operation

EATON *2-Speed Truck* AXLES

Eaton 2-Speed Axles not only let drivers select from TWICE the conventional number of gear ratios, but they make these ratios available at finger touch. Result: drivers use the right gear ratio for every road and load condition; engines operate in their most economical speed range; stress and wear are reduced on all power-transmitting parts. Trucks cost less to operate and maintain; last thousands of miles longer; and bring higher allowances at trade-in time.

More than Two Million Eaton Axles in Trucks Today. For complete information, see your truck dealer.

EATON *AXLE DIVISION*
MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Engine Valves Tappets Hydraulic Valve Lifters Valve Seat Inserts Jet Engine Parts Hydraulic Pumps Motor Truck Axles Permanent Mold Gray Iron Castings Forgings Heater-Defroster Units Automotive Air Conditioning Fastening Devices Cold Drawn Steel Stampings Gears Leaf and Coil Springs Dynamatic Drives, Brakes, Dynamometers

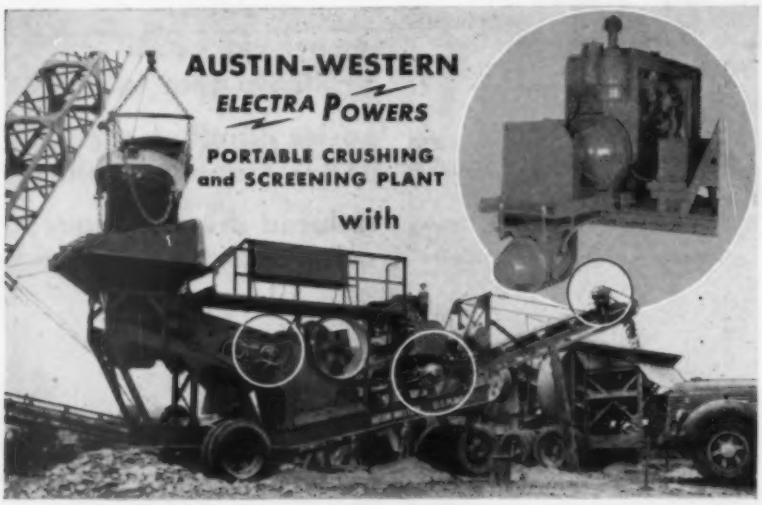
Dallas, Texas, Host City For Four-Day Schedule Of 53rd A.C.I. Convention

The 53rd annual convention of the American Concrete Institute will be held from February 25 through 28, 1957, at the Statler-Hilton Hotel, Dallas, Tex.

After one day of technical committee meetings, three days will be devoted to general sessions on concrete design and construction, materials, prestressed concrete, lightweight aggregates, and the annual research session. As in the past, the convention will include consideration of certain A.C.I. standards, the presentation of awards to distinguished members, and the introduction of new officers for 1957.

Strong attendance is expected to mark the first A.C.I. convention in Texas. A successful regional meeting was held in Houston three years ago. Cedric Willson, vice-president, Texas Industries, Inc., Dallas, will be general chairman of the Dallas committee on general arrangements.

In Spain, Portland del Sur has been authorized to erect a plant at Jerez de la Frontera. This facility will have a capacity of 180,000 tons of cement annually.



WINPOWER GENERATORS

Baldwin-Lima-Hamilton Corp.,—Construction Equipment Division—Lima, Ohio, manufacturers of AUSTIN-WESTERN crushing and screening equipment shown here, use WINPOWER generators for electric power. They know that by using WINPOWER powered electric motors and speed reducer drives on conveyors, feeders and screens they can eliminate long drive belts and drive shafts, expensive to buy and difficult to replace in case of failure in the field. *Whatever* your need there is a WINPOWER Generator for you. Generators as well as gasoline or diesel powered electric plants in capacities from 400 watts to 100 KW. You can save time and money with WINPOWER. See your WINPOWER Distributor or phone, write or wire at once for complete illustrated folder and specifications.

WINPOWER MFG. CO.
NEWTON, IOWA • U.S.A.

A.I.M.E. Board of Directors Names Dr. A. B. Kinzel To 1958-59 Presidency

Dr. Augustus B. Kinzel was elected president of the American Institute of Mining, Metallurgical, and Petroleum Engineers for one year beginning February, 1958, at a recent meeting of the Board of Directors. Dr. Kinzel is vice-president in charge of research of the Union Carbide and Carbon Corporation.

Carl E. Reistle Jr., vice-president of Humble Oil & Refining Company, is currently president of the Institute. Grover J. Holt, general manager of the ore mining department of the Cleveland-Cliffs Iron Company, will become president in 1957, taking office on February 26, 1957, at the annual meeting to be held in New Orleans.

Also elected to take office in 1958, are Edmund C. Babson and Roger V. Pierce, who will serve as vice-presidents for three years.

Rochester Portland Cement To Build $1,000,000 Dock

Construction of a 300-ft. dock in the Genesee River and four silos, for importing and distributing cement through the port of Rochester, N.Y., will be begun soon by the Rochester Portland Cement Company.

The dock and silos will be built at a cost of about $1,000,000 on three acres of land purchased from the Seaway Metals Company.

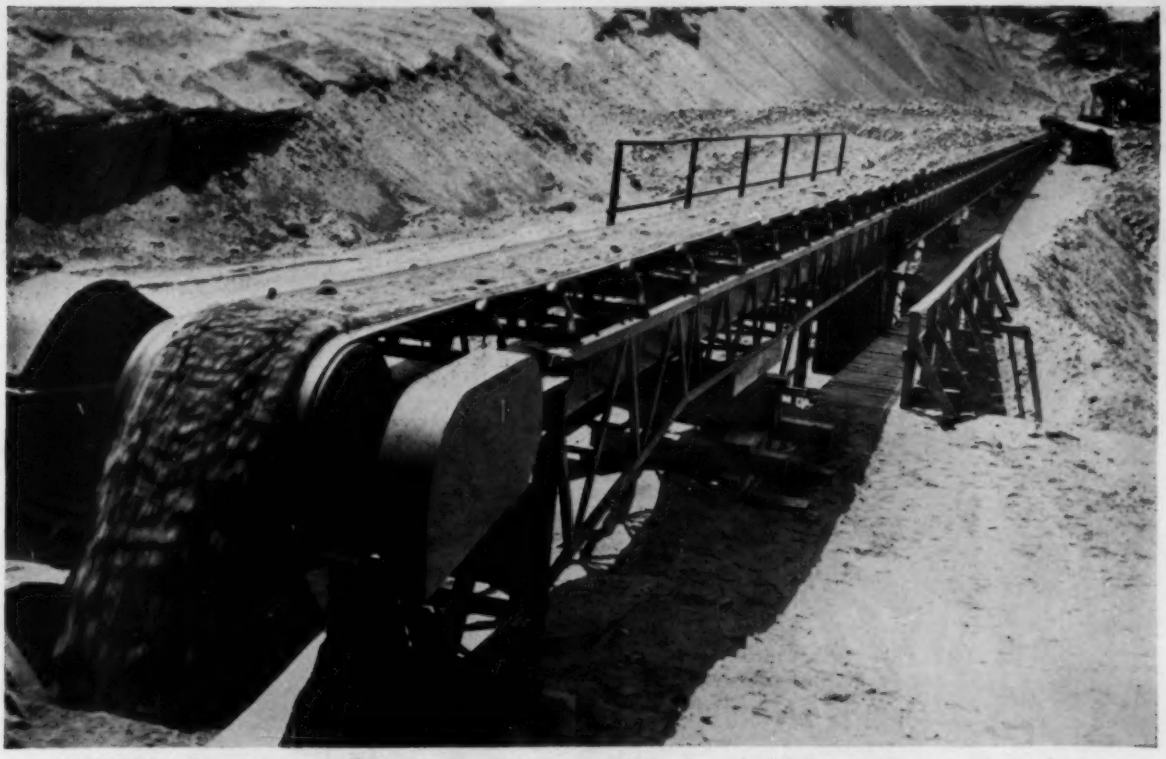
A part of the present building on the site will be razed to make room for four 90-ft. 25,000-bbl. silos and for two more at a future date. One section of the present building will be retained for storage of bagged cement. A channel will be dredged from the proposed dock to the river channel. Loading operations will be entirely enclosed and dust-free.

1956 Supplements Available For Book of A.S.T.M. Standards

To keep up to date the triennially published *Book of A.S.T.M. Standards,* the American Socity for Testing Materials, in the intervening years, issues supplements to each part of the book.

The *1956 Supplements,* issued in seven parts, give 420 specifications, tests, and definitions which were issued for the first time in 1956 or revised since their appearance in the 1955 book.

The *1956 Supplements* can be obtained from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., at $4 per part or $28 for the complete set.



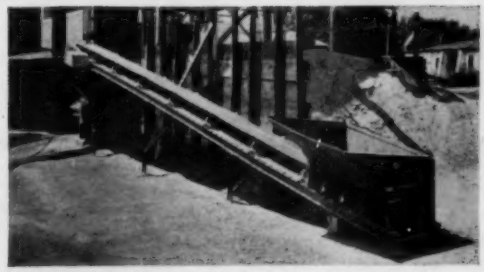
LONG HAUL—Even the longest Barber-Greene Conveyors are built of standardized components . . . produced on a precision, quantity production basis. They can be assembled in almost limitless combinations to cut the time and cost of any material handling job.

Long or short haul—it costs less to move materials with belt conveyors

Thousands of installations—ranging from a few feet to thousands of feet—prove that belt conveyors move bulk material at lowest cost.

No other machine is so simple in construction or requires so little maintenance. No other machine can deliver such high hourly capacities with so little power or attention.

Barber-Greene has given a new meaning to belt conveyor economy. Built of standardized components, Barber-Greene Conveyors are delivered sooner . . . require less engineering . . . are erected faster . . . give top performance . . . and are more easily altered to meet changing or expanding requirements. Being standardized, repair parts are readily available—usually from the stock of your local distributor.



SHORT HAUL—Even the shortest Barber-Greene Conveyors are available in standardized components in the width and length to suit your needs. These small conveyors provide the economical way to handle the widest range of materials with greatest flexibility.

56-7-PE

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Announcing the all new 4/10 yard, 8½ ton

85A "QUICK-WAY"...

When you can make money with a small outfit, think how much more money you can make with the husky *"QUICK-WAY"* 85A. Why be satisfied with a 6 or 7 tons in the 3/8 yard class when you can get 8½ tons in the 4/10 yard *"QUICK-WAY"* 85A—and for approximately the same price.

The new *"QUICK-WAY"* 85A has more Big Shovel Features than any other in the small shovel field.

It has been engineered to meet rugged, heavy-duty specifications with fewer moving parts. The power train is oversize, all shafts are splined for easy maintenance. Extra strength has been built in the machinery frame and gantry for greater lifting power.

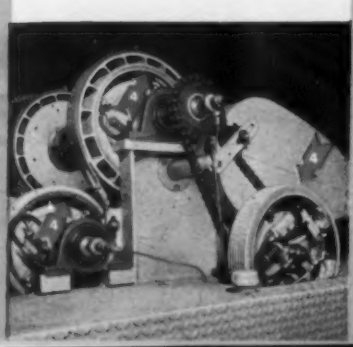
For the owner, the *"QUICK-WAY"* 85A is a quality machine, designed to deliver more efficient performance per pound and per dollar than many more costly machines.

For the operator, the *"QUICK-WAY"* 85A has been simplified for easy, economical maintenance of all parts. It operates smoothly and quietly for maximum production and minimum operator fatigue.

You owe it to yourself to see the new *"QUICK-WAY"* 85A before you buy any shovel at any price. See your distributor for a demonstration and get the real facts on how you can make more money with the husky *"QUICK-WAY"* 85A.

"QUICK-WAY"® TRUCK SHOVEL CO.
A Parr-Texas Subsidiary DENVER, COLORADO

THE ONE SMALL

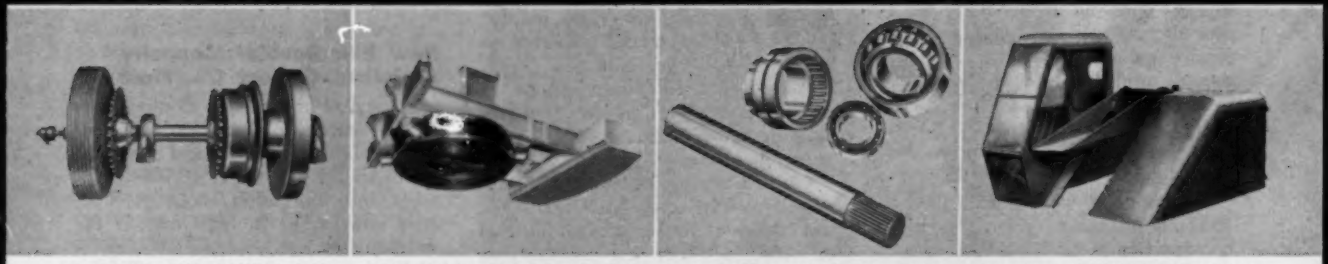


1. **SIMPLIFIED CHAIN AND GEAR DRIVE** for efficient, quiet operation—the combination of roller chains and precision machined gears gives efficient transmission of power through the minimum number of moving parts. This simple, efficient design provides quiet, low-maintenance operation. Stand. engine 47 HP @ 1800 rpm.
2. **MAIN HOIST AND HAUL BACK DRUMS**—are mounted on a single, accessible shaft with sealed anti-friction bearings. Two-piece cast laggings are easily changed for different operations. Large clutch and brake drums have separated surfaces with louvres for cooling.
3. **LARGE SWING DRUMS** are ribbed for cooling—and are mounted on a king-sized horizontal swing shaft. Swing brakes are optional. Vertical swing shaft is mounted in double anti-friction bearings at top with an anti-friction needle roller bearing at bottom. One-piece, bonded brake linings provide more surface for smoother, cooler operation.
4. **OVERSIZE CLUTCHES** have more surface—for smoother, positive action. All clutches are hydraulically operated for easy, sure application of power. Hydraulic clutch controls operate with minimum effort and give the operator the feel of the load at all times.

. . . and the all new "QUICK-WAY" CRAWLERS 85 AC & 105 AC

Now you can get the *"QUICK-WAY"* 85A and 105A on a crawler! You get the same *"QUICK-WAY"* Big Shovel Features on the crawler that gets to its job, stays with the work, even in close, restrictive quarters. The new *"QUICK-WAY"* Crawler has independent travel—forward and reverse speeds of 7/8 miles per hour in low range and 1-3/4 miles per hour in high range. It is now available in 16" crawler shoes (5.1 psi ground pressure), 24" crawler shoes (3.5 psi ground pressure), and 32" crawler shoes (2.5 psi ground pressure). Width of 95" has been especially designed for hauling on trailers.

SHOVEL WITH BIG SHOVEL FEATURES



POWER UP AND DOWN BOOM HOIST IS STANDARD — A simple precision design makes safe, sure operation. A one-piece cast steel unit contains pawl teeth, windlass and brake drum. The cable end is located in an easily accessible place for quick attachment change-over.

ONE-PIECE FLOOR FRAME, HEAVY DUTY SWING TABLE GEAR AND HOOK ROLLERS—Floor frame electric welded in jig, then all bearing mounts machined at one time for precision alignment. One-piece, cast steel swing table gear. Four hook rollers distribute load.

ALL SHAFTS SPLINED, ALL ANTI-FRICTION BEARINGS — All shafts extra large for maximum strength, precision splined for easy maintenance. Anti-friction bearings used on all high-speed, continuous rotating shafts and drums. All shaft bearing surfaces are precision ground.

MACHINERY HOUSING DESIGNED FOR COMPLETE, EASY ACCESS—to all machinery. New feature is an automobile hood-type cable trough cover that lifts high for complete access to central machinery. New cab has 360° vision through removable safety-glass windows.

THE MOST COMPLETE LINE . . . WITH 5 MODELS IN THE SMALL SHOVEL FIELD!

105A & 105AC
5/10 YD., 10½ TONS

125A
6/10 YD., 12½ TONS

with the famous money-making line of "QUICK-WAY" attachments for all models.

Get these important books . . . free!

- ☐ The new catalog on the *"QUICK-WAY"* 85A and 85AC Crawler.
- ☐ The new catalog on the *"QUICK-WAY"* 105A and 105AC Crawler.
- ☐ The new catalog on the *"QUICK-WAY"* 125A.

"QUICK-WAY" TRUCK SHOVEL CO., Dept. 97
2401 East 40th Ave., Denver 5, Colorado, U.S.A.

Name..... *Title*.....

Company.....

Address.....

City and State.....

RECORD CONSTRUCTION TO CONTINUE IN 1957

OUTLAYS for new construction are expected to total almost $46,500,000,000 in 1957, about 5 percent above the record volume of more than $44,000,000,000 evident for 1956, according to outlook estimates prepared jointly by the Departments of Commerce and Labor.

Some expansion is likely in the coming year in most major types of construction, except in new private housing. Because of the housing decline, private construction activity as a whole is expected to show only a nominal increase over this year's level, reaching a total of $31,400,000,000 in 1957, but public construction outlays will probably rise a substantial 12 percent, to $15,000,000,000. Physical volume (expenditures adjusted for price changes) also may be up slightly from 1956, and will about equal the record set in 1955.

The anticipated volume of new construction in 1957 is based on the assumption that the general level of economic activity will advance moderately, with employment continuing at record levels, and personal income reaching a new high.

Construction costs are expected to continue to rise, but at a rate slightly lower than in 1956. Building materials generally should be in adequate supply, with no more than minor spot shortages likely, because of extensive gains in plant capacity and record production levels. Mortgage funds, however will probably continue to be relatively scarce, especially for long-term, small down payment loans.

The value of work put in place in 1957 on private nonfarm residential construction is likely to total almost $14,750,000,000, about 3 percent below the 1956 volume. Anticipated increases in spending for additions and alterations to older homes and for construction of motels and other nonhousekeeping residential units will not be sufficient to offset the 5 percent decrease expected in outlays for new homebuilding. The decline in expenditures for new private housing, however, will probably be less than the drop in housing starts.

Prospects are that about 1,000,000 new private nonfarm dwelling units will be started next year. This compares with an average annual rate (seasonally adjusted) of 1,100,000 for the first 10 months of 1956, and a 1955 total of 1,310,000. The still relatively high level of housing starts predicted for 1957, despite continuation of present mortgage financing problems, results in part from sustained consumer demand for better housing, backed by rising incomes.

Most of the gain in private construction outlays between 1956 and 1957 is anticipated from increased construction activity by the public utilities, and advance in all types of new nonresidential building except commercial building, which is expected to remain unchanged from this year's record level.

Announced expansion programs suggest unprecedented 1957 expenditures of about $5,750,000,000 on privately-owned public utilities. The most significant dollar gains among the several kinds of utilities will probably occur in natural gas pipelines and electric power facilities construction.

Present indications are that private industrial plant construction will continue to expand in 1957, but at a much slower rate than during the past two years. The slower rate of expansion which is apparent from the declining level of contract awards in recent months, reflects in part the fulfillment of capacity goals in some industries, and some revision of expansion programs in others. The $3,200,000,000 expected to be put in place on industrial buildings in the coming year will be an alltime high, exceeding the 1956 volume by 5 percent and 1955 by 33 percent.

Outlays for commercial buildings will probably total $3,300,000,000, with an increase for office buildings offsetting a decline in expenditures for new stores and other mercantile buildings.

An anticipated slight rise in farm construction, reversing a four-year downtrend, is based chiefly on recent advances in farm income. Religious and private educational building, each of which achieved more construction put in place in 1956 than in any previous year, will likely expand still more in 1957.

The expected increase in public construction activity next year reflects mainly continued expansion in all types of state and local public works, especially highways, schools, and sewer and water facilities. A backlog of needs for these categories still exists, despite rising expenditures in recent years.

Highway construction probably will reach a new high of $5,500,000,000, or about 8 percent above this year's level, principally because of the expanding program of federal aid to highways. State toll-road construction may decline somewhat, as work on new and continuing projects will not compensate for major completions in 1956. To provide essential community services to new housing developments and continually growing suburbs, record expenditures of nearly $2,900,000,000 for public school building appear likely in 1957, and the value of new sewer and water facilities construction is expected to go over the $1,500,000,000 level for the first time.

Public and private hospital building, which has been declining since 1954, may show an upturn next year reflecting in part the influence of increasing Federal Aid funds.

Construction work at military bases is scheduled for another moderate advance in 1957, and will be at a post-war high. Outlays for public housing will show the first significant expansion since 1951, primarily because of the new federal program of military (Capehart) housing under title VIII of the National Housing Act. Conservation and development construction is expected to increase for the second successive year, when major works such as the St. Lawrence Seaway and the Oahe Reservoir on the Missouri River reach peak activity.

New Kiln Doubles Capacity At Inland Cement Co. Plant

A second kiln, which doubles the annual capacity of the Edmonton, Alta., plant of the Inland Cement Company, Ltd., to 2,000,000 bbl., went into operation recently. The new kiln is 340 ft. high and 11 ft. in diameter.

According to company officials, the expansion program has increased the cost of the entire plant to $12,000,000. The plant has been in production since early in 1956.

According to officials of the National Gypsum Company, Ltd., Dartmouth, Nova Scotia, there are enough gypsum deposits in Nova Scotia to last for 1,000 years. Provincial deposits were estimated at 10,000,000,000 tons. Nova Scotia produces 3,000,000 to 4,000,000 tons of gypsum annually, or about 82 percent of all Canadian gypsum production.

Bureau Of Mines Reports $25,000,000 Value In 1955 On Alaskan Mineral Output

The value of mineral production in Alaska rose to nearly $25,000,000 in 1955 to exceed the 1954 value by more than $208,000, despite a drop of $1,480,000 in the value of coal output, according to the U.S. Bureau of Mines.

The decline in coal value resulted from a drop in the average unit value of this commodity from $9.66 a ton in 1954 to $7.76 in 1955. A larger sand and gravel production, mostly for paving purposes, compensated for the drop in the value of coal output and accounted for most of the increase in the value of Alaskan mineral production in 1955.

Production of gold remained virtually the same as in 1954. Gold mining was the major mineral industry, followed by sand and gravel mining and coal mining. These three commodities—gold, sand and gravel, and coal—produced 89 percent of the total value of mineral output. Total volume of sand and gravel produced in 1955 reached 9,793,214 short tons, valued at $8,242,344. Stone production amounted to 265,740 short tons, valued at $289,589.

Fire Destroys Crushing Mill At France Stone Co. Quarry

The crushing mill at the Holland (Ohio) quarry of the France Stone Company, Toledo, Ohio, was destroyed by fire recently. Company officials estimated the total loss to be between $150,000 and $175,000.

Although the quarry has been inactive since 1950, France Stone Company was planning to resume operations at Holland. Other operations are located at Keesport, Ind., Monroe, Mich., and at Bellevue, North Baltimore, Toledo, and Waterville, Ohio.

Wyandotte Chemicals Corp. Buys Diatomite Products Plant

The Wyandotte Chemicals Corporation, Wyandotte, Mich., has purchased the diatomaceous earth plant at LaSalle Canyon, Calif., from the National Silica Products Company and Grant and Grant. The latter firm has leased the plant from National Silica, an inactive organization, and has operated the plant for the last ten years.

Under the former management, the plant produced diatomite products for use principally as fillers in stucco, plaster, and asphalt products, and aggregate for use in concrete construction.

Washington Brick & Lime Sells Idaho Subsidiary To A. P. Green Fire Brick

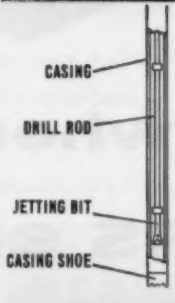
The A. P. Green Fire Brick Company, Mexico, Mo., has purchased a one-third interest in the Troy Fire Brick Company, Troy, Idaho, owned by Washington Brick & Lime Company. The Troy plant was once a wholly-owned subsidiary of Washington Brick.

After the plant at Troy was destroyed by fire last year, Washington Brick joined with Green to rebuild it and start production. This operation will be known as the A. P. Green Fire Brick Company of Idaho.

What's down there?

Empire
TEST DRILLS
come up with the
RIGHT ANSWERS

EMPIRE
Hydraulic
Testing
Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

Write TODAY for complete details

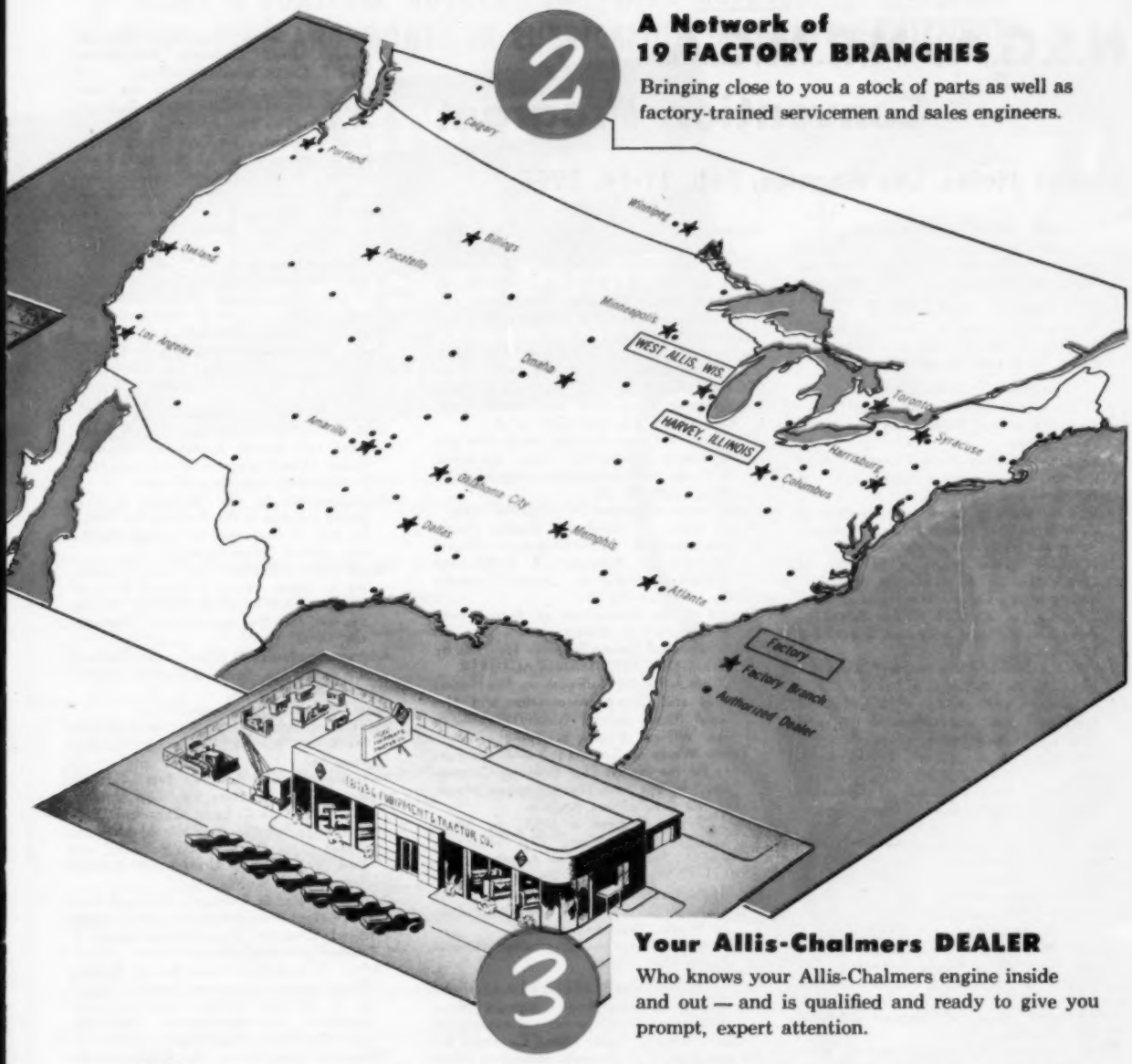
NEW YORK ENGINEERING CO. 75 WEST STREET NEW YORK 6, N. Y.

1 **Strategically located FACTORIES**

Stocking True Original Parts for continued TOP performance of your Allis-Chalmers engines.

YOU are backed up 3 deep with parts

and service...when you use ALLIS-CHALMERS engines!



You enjoy "factory-town" service wherever you are when you operate Allis-Chalmers engines — for you are backed up *3 deep* by Allis-Chalmers' proven dealer-branch-factory system.

What does this mean? It means that your dealer is serviced from one of *19* nearby factory branches— or direct from the factory. Each branch carries a stock of True Original Parts and is staffed with factory-trained servicemen as well as sales engineers. This assures prompt attention whether you need a replacement part or technical assistance.

Ask your Allis-Chalmers engine dealer to show you how this *3-deep* service can help on your specific engine needs. Write for literature and details.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

N.S.G.A.-N.R.M.C.A. Convention Program

Statler Hotel, Los Angeles, Feb. 11-14, 1957

SATURDAY, FEBRUARY 9

2:30 p.m.—Los Angeles Room — Annual meeting of Exhibitors Division National Ready Mixed Concrete Association

SUNDAY, FEBRUARY 10

2:30 p.m.—Los Angeles Room — Annual meeting of Manufacturers Division National Sand and Gravel Association

MONDAY, FEBRUARY 11

7:30 a.m.—Hartford Room—Annual meeting of Board of Trustees of Group Insurance Plan

9:30 a.m.—Washington Room — Joint meeting of Executive Committees of N.S.G.A. and N.R.M.C.A.

9:30 a.m.—Buffalo Room — Meeting of Committee on Nominations, National Sand and Gravel Association

9:30 a.m.—Boston Room — Meeting of Committee on Nominations, National Ready Mixed Concrete Association

10:30 a.m.—Los Angeles Room—Board of Directors, National Sand and Gravel Association

1:00 p.m.—Sierra Room — Joint luncheon, N.S.G.A. and N.R.M.C.A.

2:00 p.m.—Conference on activities of state and area associations in the sand and gravel and ready mixed concrete industries, H. G. Feraud, presiding officer

2:30—Sierra Room — Board of Directors, National Ready Mixed Concrete Association

2:30 p.m.—Los Angeles Room—E. K. Davison, presiding officer

"Status of Proposal to Levy Tolls on the Use of Navigable Waters," by A. R. Shiely, executive vice-president, J. L. Shiely Co., St. Paul, Minn.

"Prospects for Enactment of Legislation by the Congress to Apply Percentage Depletion to River Sand and Gravel Production," by H. C. Lockridge, vice-president, Knoxville Sangravl Material Co., Knoxville, Tenn.

"State Taxes of Special Interest to River Sand and Gravel Producers," by Charles M. Everhart, executive vice-president, Cumberland River Sand and Gravel Co., Knoxville, Tenn.

6:00 p.m. to 7:30 p.m.—Hospitality Hour—Pacific Ballroom

TUESDAY, FEBRUARY 12

9:30 a.m.—Golden State Room — National Sand and Gravel Association (Simultaneous Session), R. E. Weaver, presiding officer

Address of the president, R. E. Weaver

"The Place of the Sand and Gravel Producer in the New Highway Program," by Ezra C. Knowlton, executive vice-president, Utah Sand and Gravel Products Corp., Salt Lake City, Utah

"The New Natural Resource Regulations of the Internal Revenue Service," by John T. Sapienza, tax counsel for the associations, Washington, D. C.

"Proposed Standard Clauses for Sales Agreements in the Sand and Gravel Industry," by Charles E. Brady, president, Material Sales Company, Salisbury, N.C.

Report of the Committee on Nominations and election of officers

Presentation of Rock Products Safety Trophies for 1956

TUESDAY, FEBRUARY 12

9:30 a.m.—Pacific Ballroom — National Ready Mixed Concrete Association (Simultaneous Session), Robert Mitchell, presiding officer

Address of the President, Robert Mitchell

"Basic Insurance for a Ready Mixed Concrete Company," by Eric C. Ryberg, treasurer, Utah Sand and Gravel Products Corp., Salt Lake City, Utah

"Practical Problems in the Installation and Operation of Industrial Radio," by Glenn C. Cook, American Builders Supply Company, Louisville, Ky.

Open forum discussion on industrial radio

Panel: Glenn C. Cook, M. Eugene Sundt, vice-president, Albuquerque Gravel Products Co., Albuquerque, N. M., and William J. Hicklin Jr., Capitol Concrete Co., Jacksonville, Fla.

Report of the Committee on Nominations and election of officers

Presentation of Safety Trophies for 1956 by THE CONCRETE MANUFACTURER

2:00 p.m.—Pacific Ballroom — National Sand and Gravel Association and National Ready Mixed Concrete Association, William Moore, presiding officer

"Public Works for Los Angeles—A Program to Fit the Needs of a Growing Community," by The Hon. Norris Poulson, Mayor of the City of Los Angeles

"The Business Outlook in 1957," by Ernest Loebbecke, president, Title Insurance and Trust Company, Los Angeles, Calif.

"What California Must Do to Meet Its Requirements for Public Works," by Frank B. Durkee, State Director of Public Works, Sacramento, Calif.

6:00 to 7:30 p.m. — Hospitality Hour — Pacific Ballroom

WEDNESDAY, FEBRUARY 13

9:30 a.m.—Galeria Room, Biltmore Hotel —National Sand and Gravel Association and National Ready Mixed Concrete Association, E. P. Gemmer, presiding officer

"Public Relations Program for the Ready Mixed Concrete Industry," by Ralph H. Anderson, chairman, Public Relations Committee, N.R.M.C.A.

"Public Relations Program for the Sand and Gravel Industry," by E. K. Davison, chairman, Public Relations Committee, N.S.G.A.

Panel discussion—Various Aspects of Public Relations for the Two Industries. Participating: William E. Hole, president, American Aggregates Corp., Greenville, Ohio—Zoning; Robert J. Hummel, vice-president, Consumers Co., Chicago—Local Press; Gary L. Marable, vice-president, Ready Mix Concrete Company, Fort Lauderdale, Fla. — Metropolitan Area; E. J. Nunan, sales manager, Buffalo Slag Co., Inc., Buffalo, N. Y.—Legislative

12:30 p.m.—Pacific Ballroom—Joint luncheon of N.S.G.A. and N.R.M.C.A.

Robert Mitchell, presiding officer

Address by the Hon. Barry M. Goldwater, U. S. Senator from Arizona

2:00 p.m.—Golden State Room—National Sand and Gravel Association National Ready Mixed Concrete Association, Fred P. Curtis, presiding officer

"Cost Accounting Manuals for the Sand and Gravel and Ready Mixed Concrete Industries," by Jaul J. Kremer, chairman, Joint Committee on Cost Accounting

Discussion by members of the Joint Committee: J. M. Criswell, Warner Company, Philadelphia, Pa.; Eugene J. Halter, J. K. Davison & Bro., Pittsburgh, Pa.; Henry H. Kirwin, Eastern Rock Products, Inc., Utica, N. Y.; and J. H. Reid, Standard Paving & Materials Ltd., Toronto, Ontario, Canada

"The New Depreciation Regulations," by John W. Murphy, Union Sand and Gravel Co., Spokane, Wash.

"Tax on Motor Vehicles Imposed by Federal Highway Act of 1956," by Kenneth E. Tobin Jr., Associate executive secretary

THURSDAY, FEBRUARY 14

9:30 a.m.—Pacific Ballroom — National Sand and Gravel Association National Ready Mixed Concrete Association, Noel J. Redmond, presiding officer

"Consideration by the Congress of Proposed Change in the Federal Tax Laws," by John T. Sapienza, tax counsel for the associations, Washington, D. C.

"Does Current Federal Law Permit Producers to Meet Lower Delivered Price of Competitors?" by Charles A. Horsky, counsel for the associations, Washington, D. C.

Address by James D. Piper, vice-president for promotion, Portland Cement Association, Chicago, Ill.

Panel Discussion on Merchandising

Moderator: Robert C. Collins, general sales manager, Warner Company, Philadelphia, Pa.

Participating: Quentin W. Best, Consolidated Rock Products Co., Los Angeles, Calif.; George C. Eady, Consumers Supply Co., Louisville, Ky.; Harold M. Lacy, Dallas Concrete Co., Dallas, Tex.; and Bert W. Milling, Underwood Builders Supply Co., Mobile, Ala.

2:00 p.m.—Pacific Ballroom—National Sand and Gravel Association, National Ready Mixed Concrete Association—Harold E. Bender, presiding officer.

"What Organization Can Do to Reduce Unemployment Insurance Benefits Costs," by J. Richard Glade, executive vice-president, Inter-Association Unemployment Committee, Los Angeles, Calif.

"Effective Organization by Employers for Group Bargaining with Labor Unions," by Richard W. Lund, Latham & Watkins, Los Angeles, Calif.

"The Political Climate for Business in 1957, Viewed from the Washington Standpoint," by Vincent P. Ahearn, executive secretary.

Tentative plans for the engineering sessions follow:

On Wednesday morning the principal N.R.M.C.A. engineering session will be held. One feature will be panel discussions of special operating problems, the subject scheduled being: (a) problems of using lightweight aggregates; (b) the disposition of solids from wash water; and (c) the control of dust in batching operations.

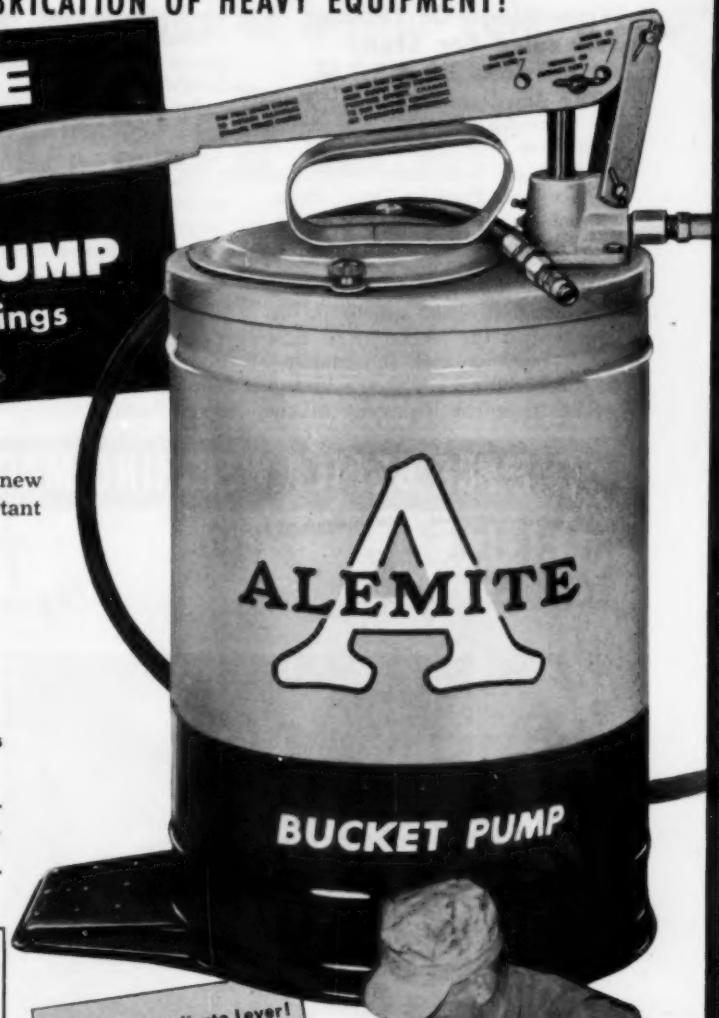
Reports will be presented by two committees: the Committee on Ready Mixed Concrete Standards

(*Continued on page 44*)

NOW! A PORTABLE BUCKET PUMP WITH ADJUSTABLE LEVERAGE
SAVES TIME AND MONEY IN LUBRICATION OF HEAVY EQUIPMENT!

NEW ALEMITE "BIG-A" PORTABLE BUCKET PUMP

Lubricates hundreds of bearings with fewer refillings!



The all-new design and construction features of the new Alemite "Big-A" Bucket Pump bring you these important advantages:

- **Handles either oil or grease!**
- **Adjustable 3 ways, for —**
  1. Light or heavy lubricants.
  2. Cold weather.
  3. Pressures from 2,500 to 5,000 lbs.

- **Easiest to carry!** Oval shape prevents bucket from bumping leg.
- **Easiest to fill!** Rugged cover is gasket-sealed . . . opens in a jiffy for fast filling.
- **Easiest to service!** One wrench disassembles entire unit.

SPECIAL ALEMITE "BIG-A" FEATURES!

- **Easily handles all lubricants.** Ends air pocket trouble and channeling.
- **New foot valve design assures full pressure** on every stroke.
- **Operates at top efficiency,** using any lubricant . . . in any weather.
- **Lube stays refinery clean.** No dirt or moisture entrance, no spilling grease.
- **Permanent pressure seal never needs attention.** Provides permanent protection.

- Exclusive Adjusto Lever!
- 35-lb. Capacity!
- Hard Chrome Piston!
- Non-tilt Foot Rest!
- 7 Models—for all types of lube fittings!

STEWART SW WARNER

ALEMITE

REG. U. S. PAT. OFF.

A Division of STEWART-WARNER CORPORATION

For complete information, write Alemite, Dept. QQ-17, 1850 Diversey Parkway, Chicago 14, Ill.

Wide Range Of Topics Scheduled For Study At Sessions of A.S.T.M.

The American Society for Testing Materials will hold its annual Committee Week and Spring Meeting February 4 through 8, 1957, at the Benjamin Franklin Hotel, Philadelphia, Pa. More than 1,400 members, committee members, and visitors are expected to attend.

Of the Society's 80 main technical committees, 35 will be in session during the week. More than 350 committee and subcommittee meetings will take place.

The technical highpoint of the week will be the Symposium on Thermal Conductivity Measurements and Applications of Thermal Insulations.

Among the wide range of technical subjects which will be included for study during the week are the following: lime, refractories, gypsum, mortars for unit masonry, manufactured masonry units, road and paving materials, and methods of testing.

South Africa's cement industry plans an expenditure of $11,200,000 for modernization and expansion, according to information received from Pretoria.

TIME FOR BETTER WEIGHING MACHINES

MERRICK SCALES 1957

MERRICK Feedoweights* feeding clinker in finish mill of large cement plant.

This year . . . every year . . . MERRICK Weightometers and Feedoweights are "key instruments" of production throughout the bulk material handling and processing industries.

Careful and experienced engineering together with quality workmanship assure accurate and economical weight records. Ease of installation and minimum maintenance guarantee high uniformity of finished product.

MERRICK Weightometers* provide continuous and precise weight records of material in transit or existing conveyors and are applicable to any width belt.

MERRICK Feedoweights* automatically blend, feed and proportion by weight such materials as clinker, gypsum, stone, ore and coal . . . infinitely over a wide range.

Write for Bulletins 375 and 253 **Reg. U. S. Pat. Office*

MERRICK SCALE MFG. CO.
180 AUTUMN STREET • PASSAIC, NEW JERSEY

1957 A.R.B.A. Road Show To Feature New Equipment For Mining, Construction

The 1957 A.R.B.A. Road Show, to be held January 28 through February 2, 1957, at the International Amphitheater, Chicago, Ill., will be the event of the year for contractors who are building up their equipment fleets for the $100,000,000 National Highway Program.

Although the show is billed as "The World's Fair of the Construction Industry," most of the equipment to be shown is the type used in mining operations and aggregate production. Shovels, cranes, bulldozers, front-end loaders, trucks, and dozens of other units will be on display.

It is said that this Road Show, the first in nine years, will be the largest indoor show ever assembled by an American industry.

More than 250 of the nation's leading manufacturers of construction equipment will spend an estimated $8,000,000 in displaying their newest models and the latest improvements in roadbuilding machinery. From 1,500 to 1,700 manufacturers representatives will be on hand to demonstrate and explain their company's products.

Members of the planning committee will spend approximately $100,000 to decorate the Amphitheater for the 1957 Road Show. Reception lounges, a telephone center with extensions to each booth, and refreshment stands will make the show more enjoyable for the thousands of delegates from the United States and foreign countries.

Free transportation for Road Show visitors will be provided by 35 buses which will run from downtown hotels to the Amphitheater.

Color-Fast Concrete Siding Developed by Ruberoid Co.

Autoclaved clapboard, a permanently-colored house siding that will not burn or rot, is now available to home builders all over the country. It is a newly-developed product of the Ruberoid Company, New York.

The new building material, designed for both new and home improvement work, is made of a combination of asbestos fibers and portland cement. Ruberoid clapboard is pre-cured under high-pressure, high-temperature steam in a new autoclaving process which assures dimensional stability. The siding is made in panels 48 in. long for fast application, and provides a 7¾-in. exposure.

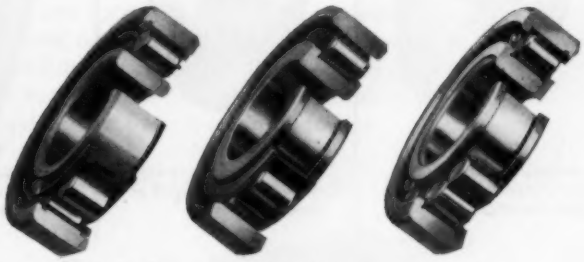
Now...load rate your bearings at higher values with Tru-Rol CROWNED ROLLERS

Greater capacity . . . longer life . . . or a precisely balanced gain of *both* factors. That is the choice offered you by the "crowned" rollers of Tru-Rol bearings.

By finish grinding a carefully selected crown radius on roller ends, Rollway relieves high stress areas, insures uniform distribution of load over the entire length of the roller. Rollers can take heavier loads without excessive end-fatigue, and are less subject to the effect of slight misalignment or deflection.

The result is load rating at higher values for greater capacity, longer service life . . . or both. If this choice interests you, why not write for the complete story. Rollway Bearing Co., Inc., Syracuse, N. Y.

Tru-Rol Bearings with crowned rollers are available in 3 types

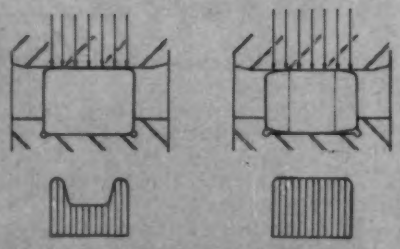


Stamped Steel Retainer with Guide Lips

Segmented Steel Retainer

Full Roller

Comparative Stress Patterns under Uniform Loads for Straight and Crowned Cylindrical Rollers



Stress pattern for a straight cylindrical roller under load. Note uneven end-loading.

Stress pattern for crowned roller under load. Crowning radius is exaggerated for clarity.

● Rollway engineering service is available to help you select exactly the right bearings for your needs. Write us.

ROLLWAY BEARINGS

COMPLETE LINE OF RADIAL AND THRUST CYLINDRICAL ROLLER BEARINGS

ROLLWAY REPLACEMENT BEARINGS are available through authorized distributors in principal cities. Consult the yellow pages of your telephone directory — under "Bearings".

ENGINEERING OFFICES: Syracuse • Boston • Chicago • Detroit • Toronto • Pittsburgh • Cleveland • Milwaukee • Seattle • Houston • Philadelphia • Los Angeles • San Francisco

N.S.G.A.-N.R.M.C.A.

(From page 40)

and the Committee on Cement. The Concrete Standards Committee's projects include the following: (a) revisions in the association's Standards for Operation of Truck Mixer and Agitators; (b) an outline of "specifications for a concrete testing laboratory;" and (c) consideration of a number of recommended practices dealing with operations. The Cement Committee will present a final report on the investigation of the uniformity of strength-producing properties of cements, on which a progress report was presented last year.

The principal engineering session of the National Sand and Gravel Association will be held on Thursday morning. An open forum on various operating problems is planned. A paper on the general subject of the effect of shape, size, and surface texture of aggregate particles on the strength of bituminous mixtures will be presented by B. A. Vallerga, managing engineer, Pacific Coast Division, Asphalt Institute.

I. L. Jennings of Consolidated Sand and Gravel Ltd., Toronto, will present a paper dealing with the control of grading of fine aggregate. An engineer of the California Highway Department will describe some methods of specifying and evaluating aggregates not generally known, since their use is confined to California and a few other far-western states. Data on tests of gravel before and after being subjected to certain benefication processes may be available in time for reporting before the convention. A paper on our current *Aggregate Evaluation Program* is planned.

On Wednesday afternoon there will be a special joint session which will display something of the character of the schoolroom. It will be conducted as a "clinic" on calculating proportions for concrete. There will be an introductory lecture on concrete proportioning, followed by actual exercises in making calculations. A very successful session of this nature was held last year.

Thursday afternoon is reserved for a joint session on engineering matters. A paper on the flexural strength of concrete, supplementing the one given last year, will be presented. This paper deals primarily with the effect of difficult-to-control factors on the measured strength—effects which may reduce the apparent strength as much as 40 percent. A review of trends and specifications for concrete aggregates is planned tentatively.

Several entertainment features have been planned for the ladies. On Monday, February 11 there will be a get-acquainted brunch, sponsored by the Southern California associations. This event will be held in the Golden State Room of the Statler at 9:30 a.m. At 9 a.m. the following day the ladies will be guests of the associations for a bus tour of the Bel-Air, Santa Monica, and Malibu areas, which will be followed by a luncheon and a fashion show at the Beverly Hills Hotel.

The get-together dinner for all attending the conventions will take place on Wednesday evening at the Moulin Rouge in Hollywood. On Thursday the ladies will be taken to visit the Huntington Library at Pasadena. There will also be an optional trip to Disneyland.

On Friday those interested will be able to visit the ready-mixed concrete plant of Livingstone Rock & Gravel Company, Inc., and then the Irwindale sand and rock plant of the Consolidated Rock Products Company, where luncheon will be served.

GILBERT N. PETERSON has been made assistant plant manager of the Buffington, Ind., plant of the Universal Atlas Cement Company, New York, N. Y. Mr. Peterson was formerly plant engineer at the Universal, Pa., plant.

STYLE PA
or Chisel Bits, provide fastest penetration in uniform rock formations

STYLE PC
or Cross Bits, operate without wedging in fissured or ravelly formations

STYLE PX
or "X" Bits, eliminate rifling and produce uniformly round blasting holes

A complete line of

KENNAMETAL* Rock Bits

...for fastest penetration...improved chip flow... long service life with low maintenance

Kennametal offers three styles of Rock Bits. All three are of improved design. All have cutting inserts of special Kennametal grades developed for percussion drilling, which combine exceptional hardness with toughness. In addition, improved brazing techniques assure extra strong bond of insert to bit body. Each style, thus, has an optimum combination of Kennametal grade and bit design to meet specific drilling conditions.

We invite you to discuss your drilling problems with a Kennametal representative. He will help you select the right style of Kennametal Rock Bits for each of your operations. Or write for additional information. KENNAMETAL INC., Mining Tool Division, Bedford, Pa.

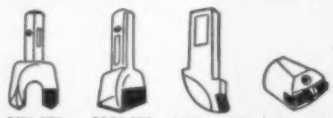
KENNAMETAL ROCK BITS ARE AVAILABLE

- ...three styles
- ...sizes up to 5" in diameter
- ...all standard thread, including Gardner-Denver thread series
- ...for use with new high power drills, without adapters

*Trademark of a series of hard tungsten and tungsten-titanium carbides

B-11,401

INDUSTRY AND KENNAMETAL ...Partners in Progress



5 "Euc" REAR-DUMPS

10 to 50 Ton Capacities

for CONSTRUCTION, MINE, QUARRY and INDUSTRIAL WORK

10-Ton

Model UD has 128 h.p. engine . . . 10-speed transmission . . . 36 m.p.h. loaded travel speed . . . spring mounted drive axle with 12.00 x 24 duals.

Euclid Rear-Dump hauling units for off-highway service are available in five sizes with capacities of 10, 15, 22, 34 and 50 tons. They have diesel engines of 128 to 600 total horsepower.

The simple rugged construction of "Eucs" pays off in long life and low maintenance cost. You get more work-ability because there's less down time for repairs. There are more Rear-Dump "Eucs" in service than all other makes of off-highway haulers combined.

Have your Euclid Dealer give you facts and figures on the complete line of Rear-Dumps and other Euclid equipment . . . you may find, as hundreds of owners have found, that ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS, Cleveland 17, Ohio

15-Ton

There are two 15-Ton models with 5-speed transmission and 14.00 x 24 tires. Model FD has 165 h.p. engine, and 10 cu. yd. body. Model R-15 has 218 h.p. engine, spring mounted drive axle, power steering and 10½ cu. yd. body. Quarry body is available for either model.

22-Ton

Model TD "Euc" is equipped with 300 h.p. engine, spring mounted drive axle with 18.00 x 25 duals, power steering and 15 yd. body. Available with Torqmatic Drive or 10-speed transmission. Standard or quarry body is available.

34-Ton

Model FFD has two engines providing a total of 400 or 436 h.p. to tandem drive axles through separate Torqmatic Drives. Dual tires are 16.00 x 25. Exhaust heated body has 24-yd. capacity.

50-Ton

Similar in design to the Model FFD "Euc", the 50-ton Twin-Power Model LLD has a total of 600 h.p. and an exhaust heated body with 32-yd. capacity. Tires are 18.00 x 33.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Empire State Producers Cover Highway Program, N.Y. Cement Requirements

The fall meeting of the Empire State Sand, Gravel and Ready Mix Association was held on October 18-19, 1956, at the Hotel Onondaga, Syracuse, N. Y. About 114 delegates, representing 47 active firms, 20 associate firms, and 12 nonmember firms, were present.

On October 19 the association convened for annual reports and discussions on important topics. *A Discourse on Front End Power Take-Offs,* presented by V. H. Berg, Truck and Mixer Division, the Worthington Corporation, Plainfield, N. J., and John Walker, Mack Motor Truck Corporation, Plainfield, was particularly informative.

Among those present at the fall meeting of the Empire State producers were (left to right): J. C. Cushing, Cushing Stone Co.; S. Catalino, Evans Builders Supply Co.; W. Nass, Syracuse Ready Mix Concrete Co.; J. C. McIntosh, McIntosh Transit Mix Company; P. R. Smith, executive secretary of the association; A. Barney, Barney & Dickerson, Inc.; H. H. Kirwin, Eastern Rock Products; F. D. Cooney Jr., Cooney Bros., Inc.; H. Keahon, Keahon Bros., Inc., secretary; J. Nunan, Buffalo Slag Co., president; and G. R. Krom, Windsor Building Supplies Co.

H. V. Owens, chairman of the Joint Highway Industries Committee, stressed the importance of the Federal Highway Aid Program and the $500,000,000 bond issue to the sand-and-gravel and ready-mixed concrete industries. Mr. Owens urged the support of this bond issue and the New York Good Roads Association in its efforts for a continued road program in New York State.

William Murray of the Motor Vehicle Bureau discussed regulations covering truck lighting requirements as of January, 1957. Mr. Murray stated that the regulations would be revised and submitted for approval.

An address on *The Five Year Estimate of Portland Cement Requirements and Supply for New York State* was presented by John Donovan, president, Valentine Concrete Company, Springfield, Mass. Mr. Donovan predicted a continued increase in local demand for cement during the next five years, and expressed his confidence in the ability of the plants serving New York State to furnish cement for local needs.

In estimating the future need for cement in New York, Mr. Donovan pointed out that in 1950 its population was 14,901,000, and the per capita use of cement was 1.07 bbl.; in 1955 the population had increased to 16,124,000 and the per capita use of cement was 1.18 bbl. On the basis of this average population increase, by 1961 the population of the state should be about 17,500,000. Officials of the cement industry have projected future production for the periods from 1956 through 1960 at a per capita use of 1.50 bbl. Mr. Donovan concluded that there will be about 26,000,000 bbl. annual total available by the end of 1957.

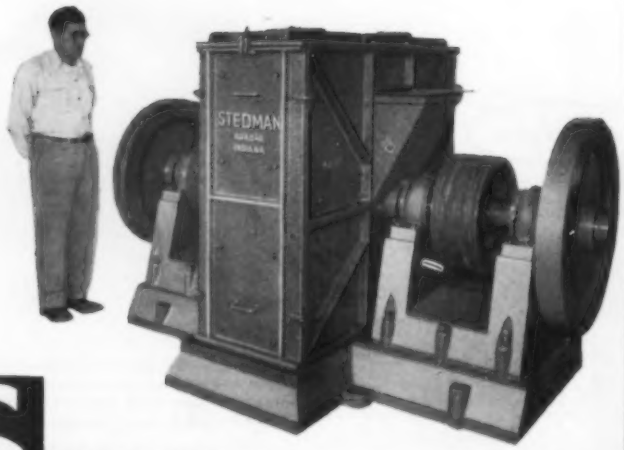
ARE YOUR STONE AND GRAVEL PRODUCTS CUBICAL IN SHAPE?

ARE THEY FREE OF SOFT STONE AND CLAY?

WILL THEY MEET SPECIFICATIONS AND PASS ABRASION TESTS?

DO YOU NEED MORE OF THE FINER SIZES IN YOUR SAND PRODUCTS?

CAN YOU MEET TODAY'S SPECIFICATIONS ON AG LIME?



STEDMAN CRUSHING EQUIPMENT
SOLVES MOST OF THESE PROBLEMS!

Write for complete details on the STEDMAN PRINCIPLE OF IMPACT CRUSHING to meet today's requirements.

MORE THAN A CENTURY OF KNOW-HOW
STEDMAN FOUNDRY AND MACHINE COMPANY, INC.
Subsidiary of United Engineering and Foundry Company
AURORA, INDIANA Founded 1834

• P. W. Andreas, executive vice-president, North American Cement company (left) and Frank Gardner, general manager, South Dakota Cement Company, were among the 60 cement plant officials and engineers attending a recent open house and demonstration at Allis-Chalmers ACL kiln pilot plant at Carrollville, Wis., near Milwaukee.

Visitors saw an actual test under way, with cement clinker being produced at the rate of about 1 bbl. per hour from raw materials shipped in for investigation. The first ACL kiln in the U. S. is scheduled to go into operation early in 1957 at the new Marquette Cement Mfg. Co. plant in Milwaukee.

Cement Exports from Israel Increasing—Expansion Planned

Israel cement exports to the United States during 1956 have increased tenfold to approximately 80,000 metric tons, valued at about $1,500,000.

Nesher Ltd., a leading cement firm in Israel, is now expanding, and its production should reach the 1,000,000-ton-per-year mark by the end of 1958. At least one-half of its output will be exported. Nesher's present capacity is 600,000 metric tons annually.

The United States is Israel's best cement customer. Other major clients are Turkey, the African coastal countries, Malta, Ceylon, and Brazil.

Heart Attack Proves Fatal To Roy W. Diefenderfer

Roy Diefenderfer, vice-president in charge of operations of the Coplay Cement Company, died unexpectedly in an Allentown, Pa., hospital on November 8, 1956. He had suffered a heart attack several hours earlier.

Mr. Diefenderfer joined the staff of the cement firm in 1928. For many years he served as director of labor relations, his first executive position. In 1952 he was named assistant to the president, an assignment he held until 1955. In that year he was made vice-president in charge of operations, a post created by the board of directors for more efficient operation of its expanding business.

Washington News

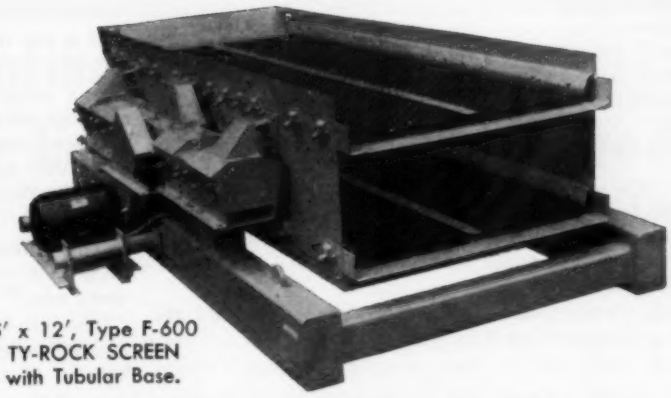
(*From page* 12)

likely to be of much help to the business facing an immediate crisis.

A far more serious enemy of small business, of course, is big business. There is little that the government can do about it without getting itself seriously embroiled. In a capitalist democracy, such as prevails in the United States, it is virtually impossible for the government to be the agent for discrimination between one business enterprise and another; but this is exactly what would be required if the government were, in fact, administering an active pro-small business program. It is for this reason that an effort to aid small business always seems to turn out to be such a wash-out.

There is a desire in Washingon to help small business, but the machinery to do this effectively has still to be invented. As a result, most small business programs are met with a shrug of the shoulders and the general comment that the only real solution for a small concern which has problems is to become a big one.

FOR PROFITABLE SCREENING USE



5′ x 12′, Type F-600 TY-ROCK SCREEN with Tubular Base.

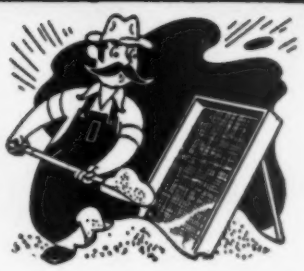
TYLER VIBRATING SCREENS AND TYLER WOVEN WIRE SCREENS

There is a Tyler Vibrating Screen for every sizing and dewatering job. Tyler Screens are noted for the huge tonnages handled with top efficiency and low cost per ton.

Tyler Woven Wire Screens are made in all meshes and metals in over 10,000 different specifications. Ton-Cap and Ty-Rod Screens with the long-slot openings provide the greatest capacity for a given discharge area.

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

Screenings



by Ray L. Smith Jr.

WHEN a new year begins, many of us pause and take inventory. We mark the distance between the goal we set at the start of last year and the distance we actually covered in those 365 days. Then we set a new goal. At this point we start thinking, "So much to do and so little time." Actually, there's quite a bit of time, as shown in the following chart. It's up to us to use it wisely in reaching our goals.

1,930 "Do-As-You-Please" Hours

The hours in 365 days total		8,760
Deduct 8 hours a day for sleep	2,920	
Deduct for work 40 hours for 49 weeks (allowing 3 weeks for vacation and holidays)	1,960	
Deduct 2 hours each working day for travel to the job and for other business purposes	490	
Deduct 3 hours a day for meals	1,095	
Deduct 1 hour a day for dressing and undressing	365	6,830
"Do-As-You-Please" hours left		1,930

In 1956 we all had 1,930 "free" hours not used on the job, nor any of the necessities of life. This "free time" was equal to 80 days of 24 hours each—nearly 22 percent of the entire year. Should we not ask, *where did these hours go?*

"I didn't have time" is not a good excuse for not attaining any goal. *You have the time.*

Weighty Problem

HOW anyone could lose a 1,500-lb. concrete mixer and grout gun off a truck was more than police could imagine, but they were asked to search for one recently.

The disappearance of the equipment that stands more than five feet high and is worth $2,000 was complete and sudden.

A truck driver, moving the heavy equipment in a truck, reported he was driving along minding his own business, when, a motorist drew alongside and yelled: "Hey, mister, you lost something."

The truck driver turned around and went back. There was nothing on the road. A few minutes later he realized the equipment was missing. Since then, no one has found anything that looked like a concrete mixer.

You will still find people who believe that mechanical devices destroy jobs. Could be, some old fashioned "mud-slinger" thought the mixer sent him into the ranks of the unemployed.

Potpourri and Succotash

A quick-thinking employee came up with a new one when his foreman said, "Hey, bud, how come you're sleeping on the job?"

Goodness gracious," he shot back, "can't a man close his eyes for a minute of prayer?"

Sign on a butcher shop in London: "We make sausage for Queen Elizabeth II."

Sign on rival shop across the street: "God Save the Queen!"

Voice on telephone: "Hello Miss Jones, Johnny Smith won't be at school today. He's not feeling well."

Teacher: "Who is this?"

Voice on telephone: "What do you mean 'who is this?' This is my daddy."

At a recent convention in town a sign had been erected near the speaker's platform for the benefit of the press photographers: It read: "Do not photograph the speakers while they are addressing the audience. Shoot them as they approach the platform."

The husband was curious. "Why do you weep and sniffle at a movie over the imaginery woes of people you never met?"

The wife replied, "The same reason why you scream and yell when a man you don't know slides into second base."

King Arthur: "I hear you have been misbehaving."

Knight: "In what manor, sire?"

A visitor from a foreign country was asked what he thought about Americans. "Funny people, you Americans," he answered. "You take a glass. You put sugar in your drink to make it sweet and lemon to make it sour; you put in gin to warm you up and ice to keep you cool. Then you say, 'Here's to you,' and drink it yourself. Funny people," he concluded shaking his head.

This young lady of the house, by way of punishment for some minor misdemeanor, was compelled to eat her dinner alone at a little table in a corner of the dining room.

The rest of the family paid no attention to her presence until they heard her audibly delivering grace over her own repast, with the words, "I thank Thee Lord for preparing a table before me in the presence of mine enemies."

Raves for no ravin' beauty...

"What a beating! But in 12 years, trucks have never had a lubrication failure!"

FOX RIVER'S MIGHTY MACHINES all provide trouble-free performance using Cities Service Gasolene, Diesel Fuel, and Lubricants. These outstanding products help the company operate at 150 tons per hour.

THAT'S DUST, BROTHER! This motor, buried in dust, is typical of operating conditions at Fox River Stone Company. Yet, using Cities Service Pacemaker Oil, there's never been a bearing failure. Never any lubrication problems.

Fox River Stone Company, Elgin, Illinois, reports trucks wear out externally, are still good internally using Cities Service Lubricants.

Operating at the rate of 150 tons per hour under the toughest conceivable quarry conditions, Fox River Stone Company produces barn and agricultural lime, 2" and 3" stone for road construction, "A" and "B" binder for asphalt road construction, flagstones, and a host of other crushed stone products.

Yet, during the last 12 years, there's never been a lubrication failure of any kind in any piece of machinery using Cities Service Lubricants.

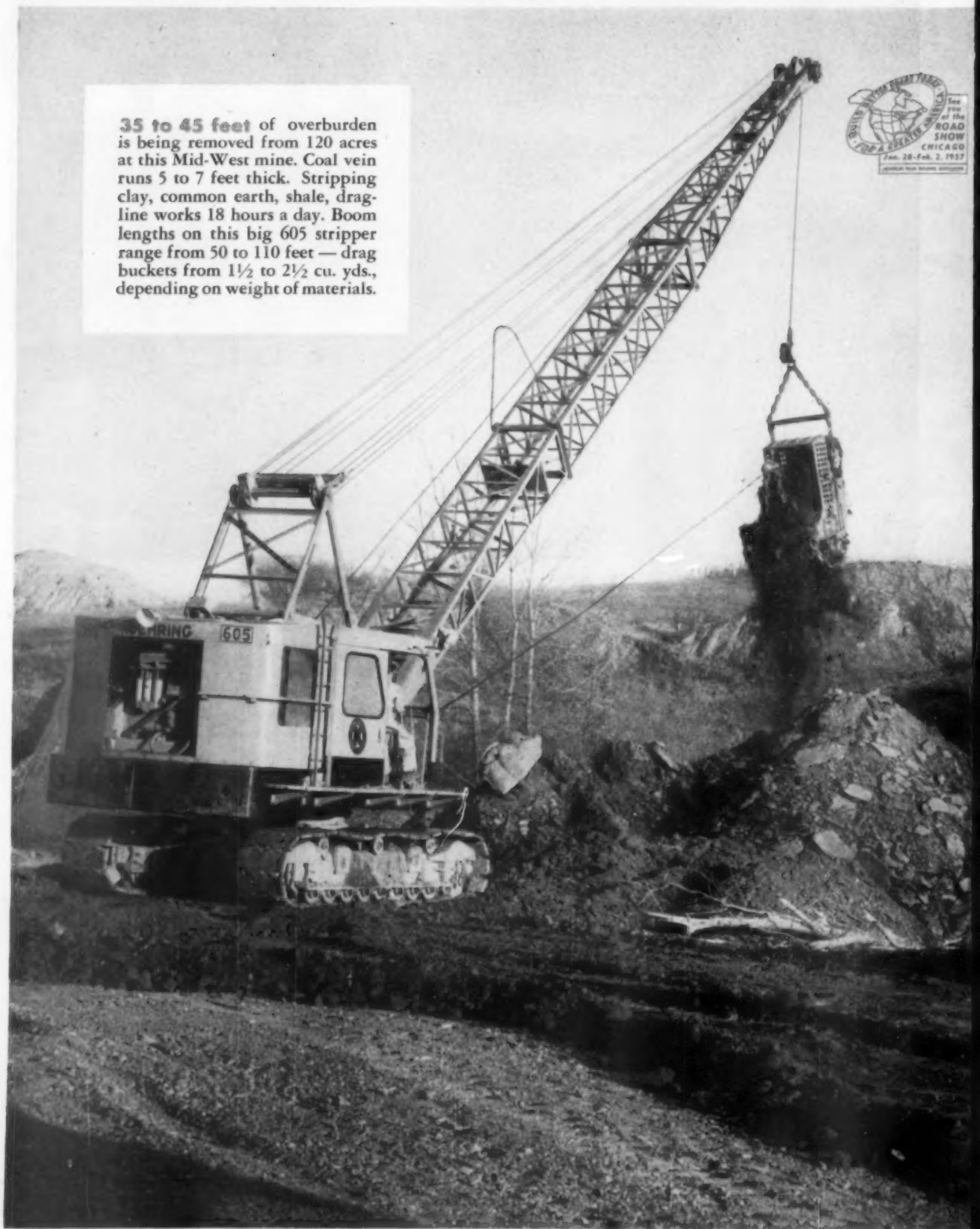
With the aid of Cities Service Gasolene, Diesel Fuel, and Trojan H-2 Multi-Purpose Grease, Fox River's many shovels, pay loaders, and trucks have given constantly flawless performance. And despite the extremely dusty quarry conditions, exposed electric motors have never lost a bearing using Pacemaker 150 T Lubricating Oil.

Not one lubrication failure in any of this equipment during 12 years of rugged operation! That's Fox River's record with Cities Service and it can be your record when you start using Cities Service Products. For information, talk with your nearest Cities Service representative or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

KOEHRING WORK CAPACITY *in action . . .*



35 to 45 feet of overburden is being removed from 120 acres at this Mid-West mine. Coal vein runs 5 to 7 feet thick. Stripping clay, common earth, shale, dragline works 18 hours a day. Boom lengths on this big 605 stripper range from 50 to 110 feet — drag buckets from 1½ to 2½ cu. yds., depending on weight of materials.

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

Meet the 405— new heavy-duty leader in the 1-yard class. Operators like its ease of control, big power clutch, automatic traction brakes, and simple 2-shaft design of upper machinery. *You'll* like its big work capacity with all attachments: 1-yard shovel or hoe, 1 to 1½-yard clam or dragline, 20-ton crane.

Pan-handler— In an Eastern quarry, slabs of sandstone are palletized on pans for quick pick-up, and loaded on trucks. Pans weigh an average of 3½ tons — an easy lift for the Koehring 205 truck crane. Constantly moving to various piles around the quarry, it easily loads 24 pans an hour, according to quarry foreman. With this mobile 205 crane they are equipped to handle loads up to 15 tons.

At rail siding, 305 clamshell crane speeds transfer of material from gondola cars to trucks. Its fast swing and wide work radius pay off on any material-handling. This heavy-duty 305 is another in a modern, new series of Koehring extra-capacity excavators and cranes. Look them over. They're all listed in accompanying chart.

Here are some figures that will interest you:

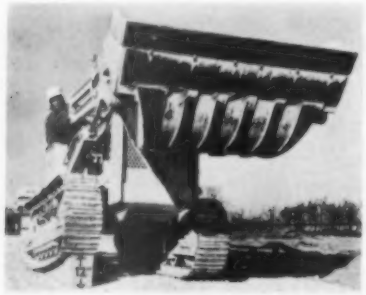
KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	½-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius

Want more information? Call Koehring distributor today.

New Machinery
and Equipment

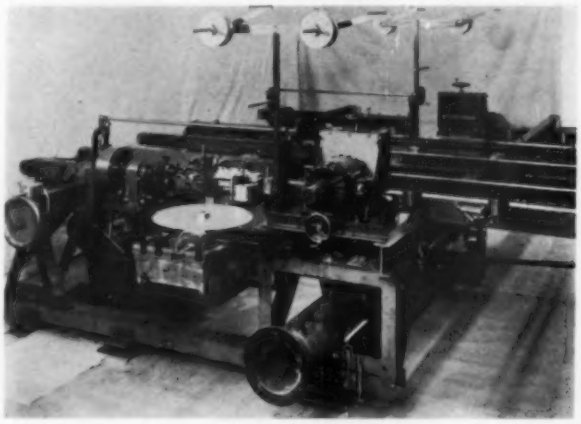
For Further Information Use Card on Pages 197-198

• This "Roto Air Plus" portable rotary air compressor, manufactured by the Jaeger Machine Company, has a capacity of 250 c.f.m. It may be powered by either a diesel or gasoline engine, and can be mounted and trailed easily on two-wheel trucks. The compressor delivers air at cooler temperatures, and produces full rated volume at a slower operating speed, with a proportionate reduction in fuel consumption and wear. **(51)**



• Two new TerraTrac crawler-loaders, in the 1½- to 2-cu. yd. range, have been announced by the American Tractor Corporation. The machines feature a new power-shifting terramatic transmission which provides independent power control of each track, and torsion bar track suspension which enables the loaders to maintain a level cut with full traction on both tracks, regardless of ground surface irregularities. The front end of one crawler track can be raised 12 in. above the ground while the other track is flat on the ground, and the bucket cutting edge remains level. **(52)**

• Wallboard can be production-line sawed and edge-stripped at minimized cost on this labor-saving sawing-stripping machine manufactured by the Brackett Stripping Machine Company. Units are supplied complete with sawing equipment, telescoping duct work, tear strip mounts, guides, etc. The machine saws and strips two boards ⅜ in. or ½ in. thickness 48 in. wide to 14 ft. or 16 ft. and intermediate lengths. It strips two 2½ in. by 24 in. by 8 ft. pieces of sheathing. **(53)**



• Motor truck, axle load, and overhead scales, as well as scales for use in product testing, are included in Toledo Scale Company's new line of electronic load cell scales. Basically, these scales consist of two main elements — the load cells with platform or load suspension unit, and an electronically actuated servo-type indicating mechanism. The scales may be equipped for the transmission of digital signals to remotely located office machines on which the weight data can be added, listed, or tabulated automatically. **(54)**

• Pictured above is a chute liner made of "T-1", a new, multi-purpose constructional alloy steel made by the Lukens Steel Company. "T-1" is a quenched and tempered plate steel possessing unusual physical properties. It is produced in regular or firebox quality for applications in which increased strength or decreased weight is required, and in 321 Min. Brinell hardness quality for service under conditions of severe impact and abrasion. After handling 750 tons of crushed limestone each day for the last 19 months at the Bradford Hills Quarry in Downingtown, Pa., the liner shows only slight visible wear, and is said to have effected savings of more than 400 percent. **(55)**

PRODUCE MORE FINES!

WITH OUR *NEW* LINE OF

4-CAGE DISINTEGRATING MILLS

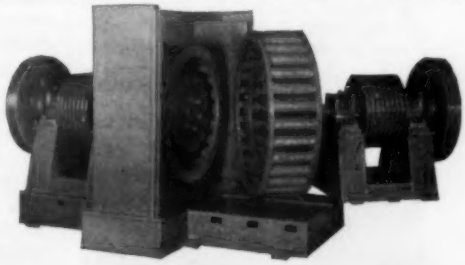
For reduction of limestone, fertilizing compounds, slag, pre-crushed stone, clay, low silica gravel, etc.

Hard-facing of pins and side walls is among the features of this Eagle Disintegrator, latest addition to a nearly 25-year old, distinguished family of pulverizers, crushers, and related equipment.

Capacities range from approximately 10 tons per hour on Model 3 to approximately 55 tons per hour on Model 5—three models in all.

One-piece frame, electrically welded, assures exceptional strength and stability. High quality, SKF or Torrington, taper-bore bearings, spherical roller type, permit takeup due to wear—an exclusive Eagle feature!

Quickest access — when occasion demands it, you can get at and into this Eagle faster than into any comparable model. Remove pin to raise hinged lid, then 6 bolts to remove access side plate —and you're in!



Write for further details—for engineering help with your crusher problem!

EAGLE

JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS

CRUSHER CO., *Inc.* GALION OHIO·U·S·A

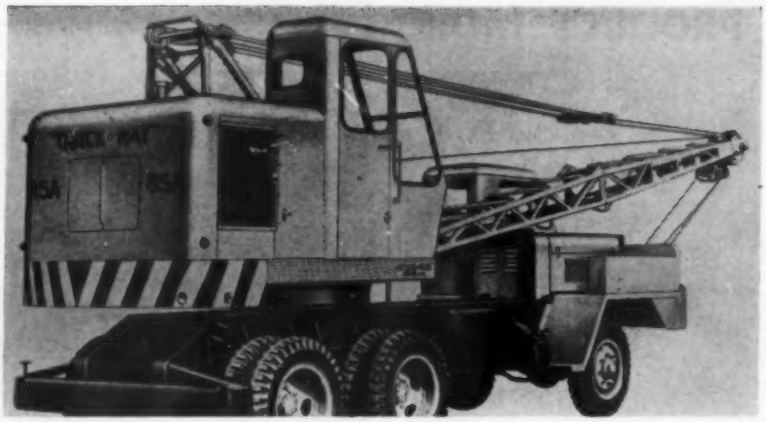
LOW TEMP LUBRIPLATE

*** Best for Sub-Zero Lubrication**

Highly recommended for general grease applications on all types of machines operating at very low temperatures. Remains plastic at temperatures as low as 70° F below Zero and has a Melting Point of 270° F. Possesses high film strength and is of a consistency that meets all requirements. Can be easily applied through grease guns or by other means of application. LOW TEMP LUBRIPLATE is waterproof and will protect automotive and other types of equipment against the unfavorable effect of salt or calcium chloride as used on highways during winter months.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



• Three new power crane-shovel models have been introduced by the "Quick-Way" Truck Shovel Company. Model 85A (above), a truck mounted 4/10 cu. yd., 8½ ton convertible crane-shovel, features 360 deg. vision in the steel cab, good ventilation, conveniently grouped controls, light pressure hydraulic clutch controls, and side swinging doors to facilitate accessibility and maintenance. Model 105AC is a crawler mounted version of the 5/10 cu. yd. model 105A. The company also offers the 85AC, a 4/10 cu. yd. crawler mounted shovel. **(56)**

• The Davis Pit-Bull, produced by Mid-Western Industries, Inc., can handle seven attachments, including a shovel, dozer, or fork lift. A torque converter with hydraulic-reversing clutch allows changing direction without shifting gears. Other features include five speeds forward and five speeds reverse; hydraulic turning and parking brakes; and a choice of gas or diesel power plant. **(57)**

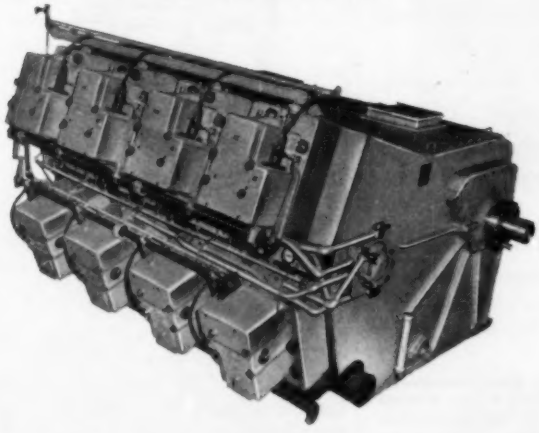
• Deposition rates up to 20 lb. per hour, open arc welding with no flux, complete visibility of the arc, no stub end losses, and lightweight, easy to handle equipment, are some of the features found in the semi-automatic hardfacing method developed by the Stoody Company. The semi-automatic welding machine is a simple device to feed continuous coiled wire through flexible cable to the welding nozzle. Wires of small diameter are used in this process. These products are supplied in a number of different analyses designed for all types of application from the simple build-up of manganese parts to the deposition of tungsten carbide overlays. **(58)**

FOR **HIGH PRODUCTION** AND **LOWEST OPERATING** COSTS—

NOTHING equals the PAGE 700 SERIES SINGLE DECK WALKING DRAGLINE

3 models
5 to 15 cubic
yard capacities

Powered by the
DRAGLINE-PROVED PAGE HORIZONTAL V-TYPE DIESEL



The Page Engines powering 700 Series Draglines are designed specifically for dragline work . . . to work longer, at lower cost, with less downtime and maintenance than any other engine. Big bearings, big pistons, a short, stiff crankshaft and slow (450 RPM) speed are only part of the story of why many Page Diesels are still producing maximum horsepower after 20 years of operation. Bulletin WDSD-155 has full details.

Page 700 Series Draglines are rugged, compact, workhorse machines. They are designed and built with the fastest practical hoist and swing speed to reduce cycle time and increase yardage.

The Page 700 Series Dragline is proof that a fast, efficient, medium-sized machine will *consistently* outperform larger, but slower machines in virtually every kind of digging.

In addition, initial investment for a Page 700 Series Walking Dragline is considerably smaller, and operating and maintenance costs are lower. *Want more details? Write for Bulletin WDSD-155 today. There's no obligation.*

PAGE ENGINEERING COMPANY
CLEARING P. O. — CHICAGO 38

Page

Automatic Dragline Buckets
Walking Draglines

W-2001

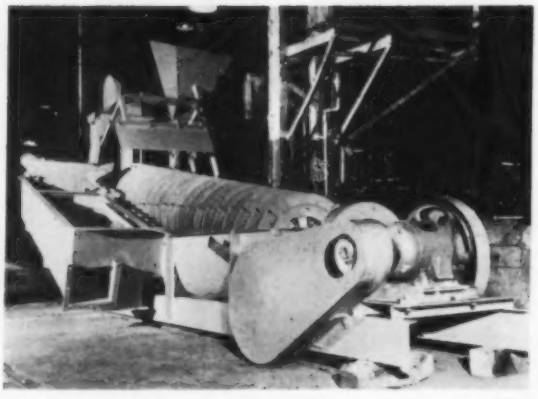
If it's a PAGE... *It* DIGS

COST CUTTING EQUIPMENT

AKINS CLASSIFIERS

AND

HEAVY MEDIA SEPARATORS



The Akins Classifier was originally developed, in 1908, for use in closed circuit with a ball mill. Its outstanding success led to many other profitable applications where it has demonstrated its superiority... dewatering and recovering fine solids; sand and slime separations; washing coal, sand, and oyster shell; desliming and de-oiling phosphate rock and concentrate; sink-float concentration; and many others. The Akins is made in sizes up to 84", simplex and duplex, in two types—small and large settling pool.

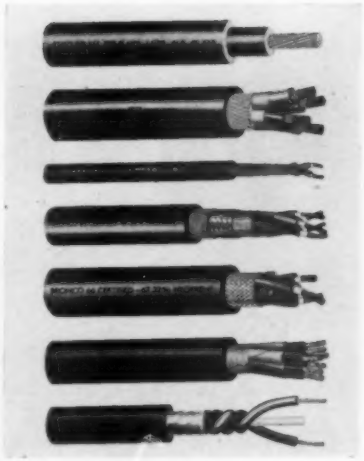
The Akins Heavy-Media Separator is the only unit available which can make a 3-product separation in one machine from one medium cleanup circuit.

REPRESENTATIVES ***Licensed Manufacturers and Sales Representatives:***
Canadian Locomotive Co., Ltd., Kingston, Ont., Can. • John Carruthers & Co. (Pty.), Ltd., Sydney, Australia
Head, Wrightson & Co., Ltd., Stockton-on-Tees, Eng. • Head, Wrightson & Co., S.A. (Pty), Ltd., Johannesburg
Sales Agents: Andrews and George Co., Inc., 5 Shiba Park, Tokyo, Japan • Edw. J. Nell Co., Manila, P.I.
Continental Sales and Equipment Co., Hibbing, Minnesota • R. H. Clark Equipment Co., Mulberry, Florida
Mines Engineering and Equipment Co., San Francisco, Calif.

COLORADO IRON WORKS CO.

DENVER, COLORADO

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.



• Some of the new Bronco electrical wires and cables manufactured by the Western Insulated Wire Company are illustrated above. From top to bottom they are:

Style RR Underground Service Entrance 600 v. cable.

High voltage—2,001-3,000 v.—Type W cable.

Type SO 600 v. Shielded Cord.

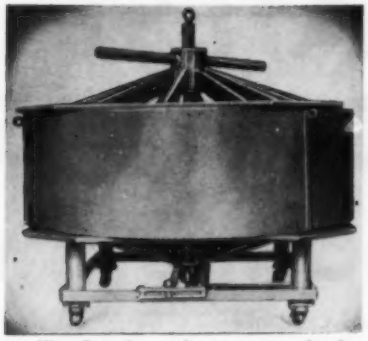
Shielded Control Cable, 600 v.

Type W 600 v. "P & R" Cable for payout and retractable reels.

Stationary 600 v. control cable.

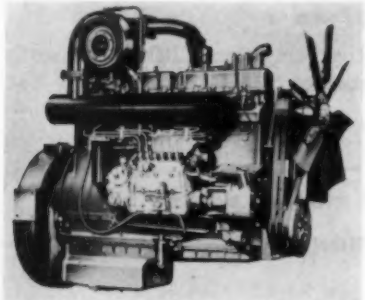
Miner's Lamp Cord. **(59)**

• Design of the SKF Type "C" spherical roller bearing now provides a positive method for lubricating all spherical roller bearings in sizes from 140 mm. O.D. and larger to obtain the efficient "center" lubrication of the bearing, providing increased capacity and increased service life. All working surfaces are quickly covered with lubricant; the old lubricant and any impurities are flushed away. SKF spherical roller bearings with this method of lubrication can be used in any existing housing by drilling and tapping a new hole for the fitting in the center of the housing and plugging the original hole on the side. **(60)**



• Tru-Band equipment, made by Trutred Tire Molds, Inc., for recapping large and even gigantic tires used on off-the-road equipment, provides convenient, close-by facilities, enabling operators to economize on time and maintenance costs. Tru-Band tire molds are capable of handling tire sizes from 14.00 by 24 up through 30.00 by 33. **(61)**

• Extra roominess, full "stand-up" height and good visibility in all directions are features of a new comfort-cab designed by the Oliver Corporation for its super 99 and 99 GM tractors. The sloping, full-width, full-height windshield is standard equipment. A choice of side and rear enclosures—demountable hinged side windows, glass-windowed rear doors, or canvas rear curtains—is offered. **(62)**



• Turbo-supercharged diesel Model 148-DKBS, manufactured by the Waukesha Motor Company, delivers about 280 hp. at 1,200 r.p.m. Waukesha makes motors ranging from 5 to 1,100 hp. **(63)**

Get FASTER, Lower-Cost

BLAST HOLES

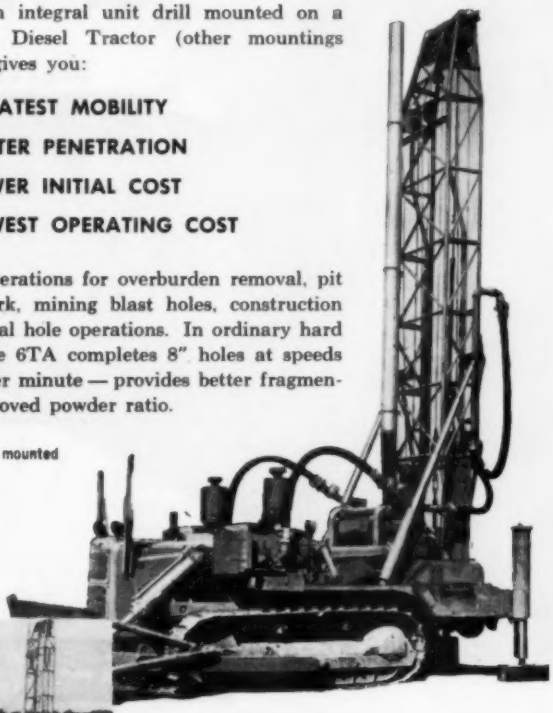
with the PORTADRILL 6TA

The 6TA is an integral unit drill mounted on a Caterpillar D6 Diesel Tractor (other mountings optional) that gives you:

- **GREATEST MOBILITY**
- **FASTER PENETRATION**
- **LOWER INITIAL COST**
- **LOWEST OPERATING COST**

in blast hole operations for overburden removal, pit and quarry work, mining blast holes, construction and other vertical hole operations. In ordinary hard rock drilling the 6TA completes 8" holes at speeds of 1 to 3 feet per minute — provides better fragmentation and improved powder ratio.

Portadrill 6TA-Tractor mounted



Model 6TA mounted on all-wheel drive carrier.

INTEGRAL DUST CONTROL SYSTEM

An efficient built-in dust control system eliminates the hazards of blowing dust at the hole site. Cuttings may be used for stemming the hole. Portadrill Design speeds servicing . . . parts are obtainable anywhere in the world.

Get the FACTS on the 6 TA

This field-proved drill will cut your vertical hole costs — give you greater production with less initial and operating costs. Complete specifications, price and delivery date on request.

PORTADRILL

REG. U.S. PAT. OFF.

MANUFACTURED BY

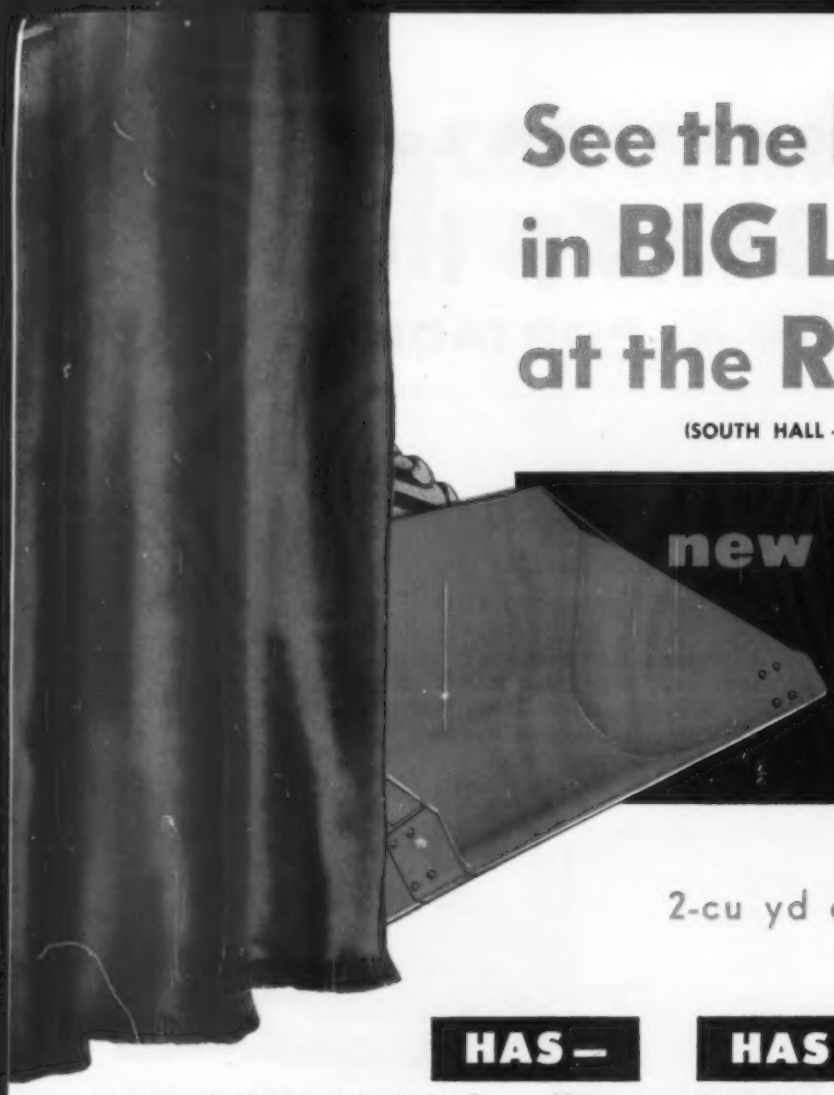
THE WINTER-WEISS CO.

2201 Blake Street — Denver 5, Colo., USA

Portadrill Models include conventional drills; "air blast" and combination air-water and Reverse circulation models — truck, tractor or trailer mounted for vertical hole operations to 2,000' depths and up to 60" diameters.

See the LATEST in BIG LOADERS at the Road Show

(SOUTH HALL — ALLIS-CHALMERS AREA)



new TRACTOMOTIVE TL-20 TRACTO LOADER

20,000 lb
2-cu yd capacity • 100 hp

HAS—

FULL POWER-SHIFT TRANSMISSION that enables you to go from any forward to any reverse speed instantly. You quick-shift "on the fly" — no stop-and-go shifting.

HAS—

HYDRAULIC TORQUE CONVERTER DRIVE that multiplies torque 350 percent . . . provides the smoothest loading action you've ever seen in a wheel loader. No butting or ramming, no engine stalls.

HAS—

- High Traction Differential with Pin-Connected, PLANETARY AXLES
- Tip-Back Bucket
- Rear-Wheel Power Steering
- 4-Wheel Drive and 4-Wheel Power Brakes
- Full-Flow Oil Filter
- Screen and Magnetic Filters in Hydraulic System
- Lift and Dump Cylinders located well above ground and out of the way.
- One-Piece Welded Frame

Only Tractomotive brings you all these operating and service advantages. You PAY LESS . . . You GET MORE.

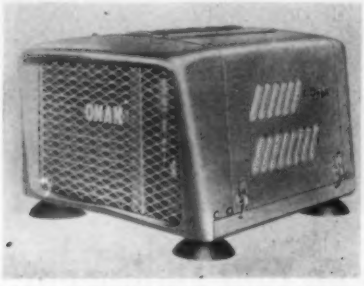
TRACTO — a sure sign of modern design

TRACTOMOTIVE EQUIPMENT
IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS CONSTRUCTION MACHINERY DEALER.

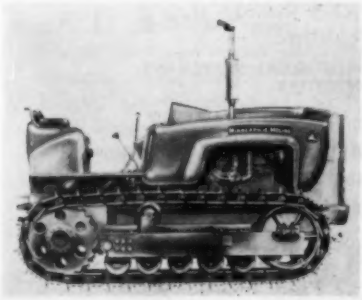
TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

• Specially designed by the Macwhyte Company, this reel of scraper rope fits on carry-type scrapers and bulldozers. Macwhyte wire rope products include wire rope for all types of equipment, slings for handling materials, and special cable assemblies for towing, handling, and controls. **(64)**

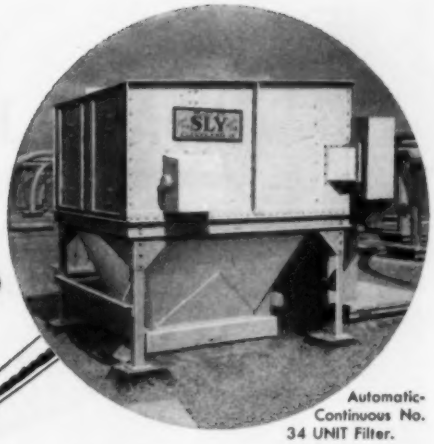


• The "Kab Kooler," a self-contained, self-powered air-conditioning system for truck cabs, has been designed by D. W. Onan & Sons Inc. The 1-1/3 ton cooling capacity makes it effective in reducing temperatures on hot days to an efficient working level for operators of cranes, power shovels, and other equipment in which the operator's compartment is enclosed. **(65)**



• First in a new line of crawler tractors to be designed and built by the Minneapolis-Moline Company is this "Golden Kat," available with either diesel or gasoline engines. **(66)**

"Midget" SLY Filters Do BIG Job at Lehigh



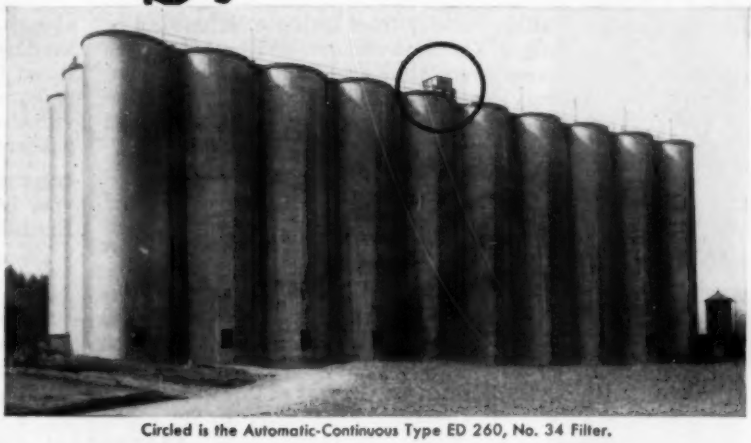
Automatic-Continuous No. 34 UNIT Filter.

The two Sly Filters in the illustrations pack plenty of filter cloth into their small overall dimensions. That's why they do such a big job for Lehigh Portland Cement Company, Alsen, N. Y. The Automatic-Continuous Sly Dust Filter handles 2,500 cubic feet of cement-dust-laden air per minute from silos being filled by pneumatic pumping system. The Automatic-Continuous UNIT Filter handles 1,000 C.F.M. Yet each is little more than six feet long.

Both feature a Sly design that eliminates costly piping. Dust-laden air enters the filter upward direct from the silos. When the filter bags are shaken, cement dust drops back into the silos.

This installation shows how Sly designs and installs dust control systems to produce maximum benefits for lowest cost . . . indicates why more Sly Filters are used by the cement industry than any other make.

REVIEW THE SLY LINE —
WRITE FOR BULLETINS 93, 98, 102



Circled is the Automatic-Continuous Type ED 260, No. 34 Filter.

SINCE 1874

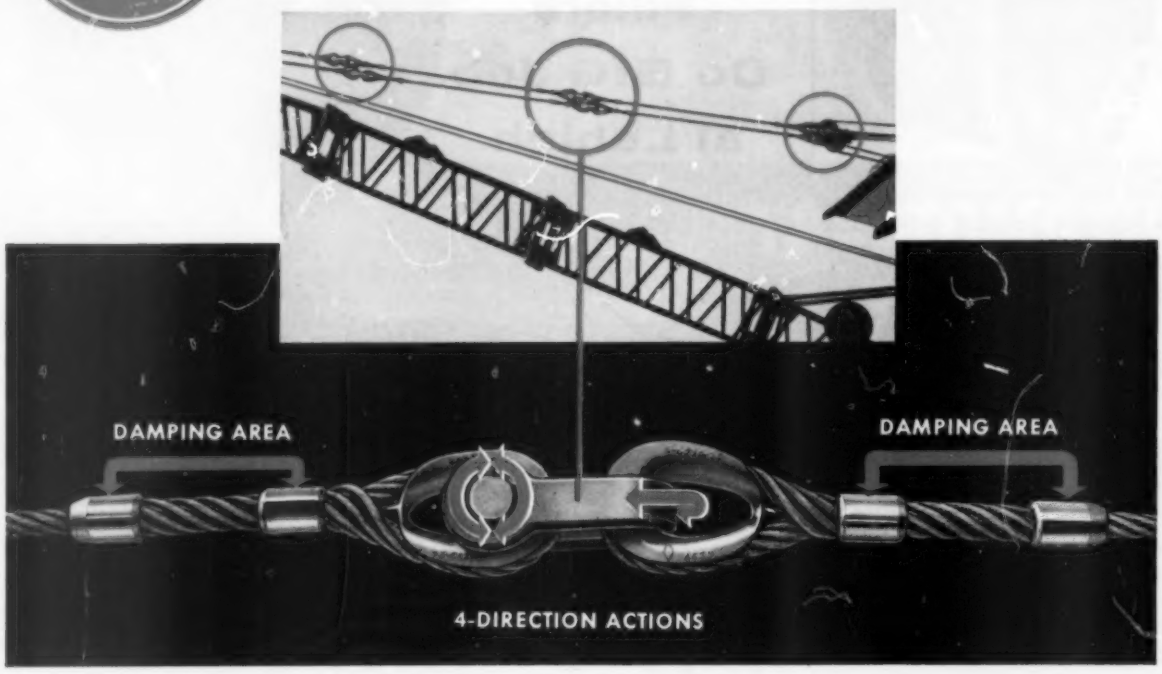
THE W. W. SLY MANUFACTURING CO.

4745 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

an ACCO product

ACCO Registered* Dualoc Boom Cables



Why You Need ACCO Registered Boom Cables on Your Equipment:

...Every Buckled or Dropped Boom Results from Boom Cable Failure

Failure results from either overloading or fatigue. You can avoid overloading, but fatigue occurs every time vibration is stopped suddenly in a wire rope and it is practically impossible to measure how badly the rope is fatigued before failure occurs.

Because vibration in a boom cable occurs in more than one plane, any type of connector which can move in a single plane only, forces the wire rope to stop vibration in all other planes. Therefore, fatigue is set up.

ACCO Registered Boom Cable Connectors give movement in FOUR DIRECTIONS and thus change fatigue to wear, which can be measured easily.

To decrease the amount of this wear and to absorb any vibration which might not be handled by the connectors, ACCO Registered Boom Cables use the damping action of the patented DUALOC ending which absorbs the vibration over a considerable area without dangerously localized fatigue.

ONLY ACCO REGISTERED BOOM CABLES protect your investment through their following Exclusive Features:

1. FOUR-DIRECTIONAL MOVEMENT BY CONNECTORS
2. DUALOC VIBRATION DAMPING
3. WARRANTED STRENGTH
4. CERTIFIED PROOF TEST

* Trade Mark Registered

Write today for your copy of **Catalog DH-220** which includes complete information, including dimensions and breaking strengths on the complete line of ACCO-Registered DUALOC Boom Cable assemblies.

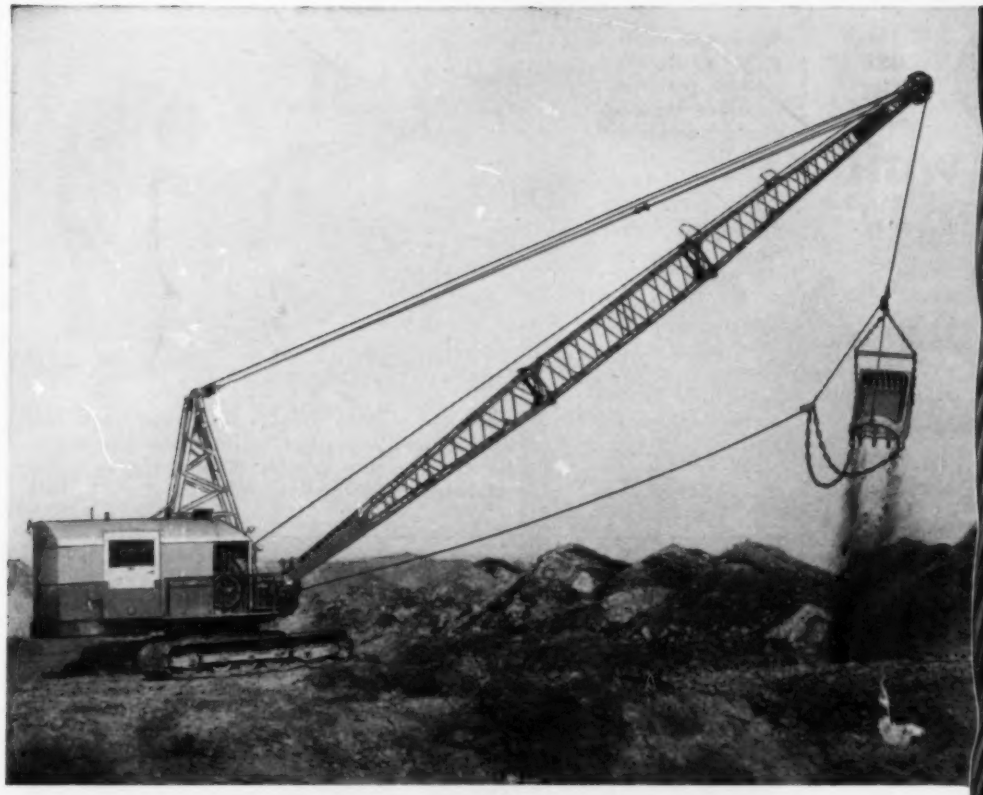
ACCO

AMERICAN CHAIN & CABLE

Wilkes-Barre, Pennsylvania

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.
In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

Better Value



LAY-SET VHS

15% Stronger • Tougher • More Wear-Resistant

New VHS Dragline Lasts 58% Longer ...at Keller Mines

• Mr. John Oreskovich, Superintendent of Keller Mines, Inc., Beloit, Ohio says: "9 to 12 days used to be about all the life we could expect from the best Improved Plow Steel draglines on this Lima 1201 excavator. However with new VHS we are getting from 19 to 24 days—increasing service life from 58% to over 100%. Naturally we have switched to VHS on every piece of equipment for which a VHS line is made."

Service records like this are becoming commonplace in the mining industry. For new tougher VHS resists abrasion . . . keeps its shape under pressure . . . can't become "hide bound" or lose its flexibility. Developed specifically for draglines, slusher ropes and shovel hoist ropes, it stands up better in these toughest of wire rope applications.

Cuts "Down Time," Saves Money—The longer life you get from new VHS saves you money. And you make additional savings by cutting costly "down time" of equipment for wire rope replacement.

Stronger Too—New VHS, made from a new grade of steel for wire rope, is at least 15% stronger than Improved Plow Steel—the strongest grade available before the introduction of VHS. This means you can handle heavier loads with the same diameter line. And you have a higher factor of safety . . . additional insurance against sudden overstresses.

Easy to Order—You don't need any complicated specifications to order new VHS. Just call your Hazard distributor and ask him for a VHS dragline, shovel hoist rope or slusher rope in the size you want. He has it in stock.

For more information see your Hazard distributor salesman or write to the nearest Hazard office for Bulletin DH-513H

HAZARD WIRE ROPE DIVISION
American Chain & Cable Company, Inc.
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

IT COSTS NO MORE TO USE THE BEST

REPLACE WITH
"Indian Brand"

MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

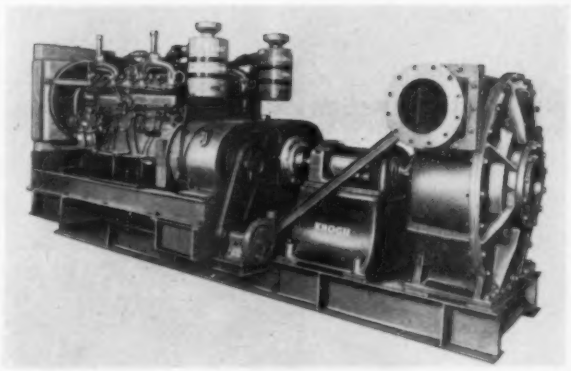
insist on
WIRECO
safety splice* SLINGS

for safety
The Wireco Safety Splice is strong and smooth without hazards such as protruding strand ends, swaged collars or servings.

for efficiency
Handlers do more work in less time with greater safety.

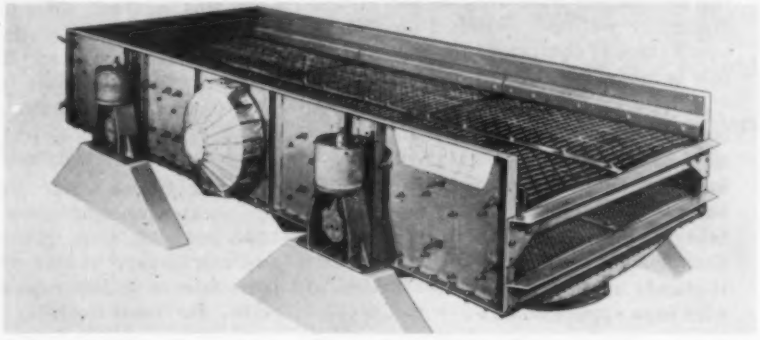
*Smooth-Splice Miracle-Lock Safety Sling

WIRE ROPE CORPORATION OF AMERICA
St. Joseph, Missouri



• Completion of a new diesel engine powered dredge pump combination for medium - size heavy - duty dredge pump operation has been announced by the Krogh Pump & Equipment Company, Inc. The pump and engines are assembled on a unit type base for rigity and portability. The 12 in. full lined dredge pump is designed to handle more that 5,000 gal. per minute of mud, sand, gravel, and water, and will pass rocks up to 6 in. and larger. It is capable of pumping to a distance of ½ mile. **(67)**

• Euclid Division, General Motors Corporation, has introduced a new 40-ton rear dump with a struck capacity of 26 cu. yd. to replace its former 34-ton model. Designated the R-40, the new model is a twin-power unit with separate engines, each driving its own rear axle through three-speed Allison Torqmatic Drives. The R-40 is powered by either two 235 hp. G.M. engines or two 250 hp. Cummins engines. Both are turbo-charged, providing a substantial increase in horsepower. **(68)**



• Gyroset vibrating screens manufactured by the Productive Equipment Corporation, have a positive eccentric action which gives a full circle throw over the entire screen surface. Using only two bearings, the eccentric action requires fewer moving parts. These machines can be operated at high speed at any degree of pitch, and are equally effective for slurry scalping or any washing or dewatering operation. They are available in sizes ranging from 18 in. to 72 in. wide, and 4 ft. to 16 ft. long, one to three decks. Illustrated is a 4 ft. by 12 ft. two-deck base-mounted Gyroset with hopper. **(69)**

Conveyor Belts...

By the foot...

just 60 feet of new U. S. SteepGrade belting (on this Travelift, Phelps Manufacturing Co., Van Nuys, Calif.) helped *triple* the daily hauling capacity of this California roofing company.

By the mile...

world's longest wood pulp conveyor system (Weyerhaeuser Timber Company, Everett, Washington) utilizes two-and-a-half miles of U. S. Giant® conveyor belting.

Regardless of the size of belt—regardless of the job—regardless of the location—your reliable supply point is the nearest U. S. Rubber District Sales Office.

Complete belting service, expert splicing, belt engineering and conveyor design help, and the most complete line of materials handling belts—all are yours without delay.

The "U. S." belting engineer will show you the unique "U. S." belt kit which enables him to custom-build a miniature sample—right before your eyes—of the right type and size belt for your requirements.

Contact any of the 28 strategically located "U. S." District Sales Offices, or write us at Rockefeller Center, New York 20, N. Y.

Mechanical Goods Division

United States Rubber

DURACLONE
. . . . Proved By Performance

● When the management of Star Rock Products built its new sand-and-gravel plant near Santa Ana, Calif., it ordered the two 25-in. DURACLONES pictured above to extract fine sand fractions from classifier wastes.

● The choice was a natural one, since another DURACLONE had already proved itself by performance at the firm's El Monte (Century Rock Products) plant, erected in 1953.

● According to Supt. F. E. MacDonald, who designed the new Star operation, the two newly-installed DURACLONES are recovering from 5 to 10 tons of "lost" fine, clean sand per hour from the remnants in the overflow.

● Completely rubber-lined, DURACLONES are sold on a guaranteed-performance basis when installed as directed.

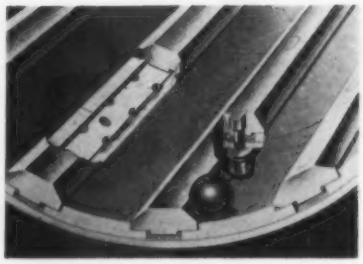
● If your finished sand is deficient in the minus-50-mesh range, a DURACLONE can probably correct the trouble. In addition, the market value of the sand you save will quickly pay for it. Send the coupon below for information, NOW!

H. B. Large Engineering Co.
262 S. Parkwood Ave.
Pasadena, Calif.

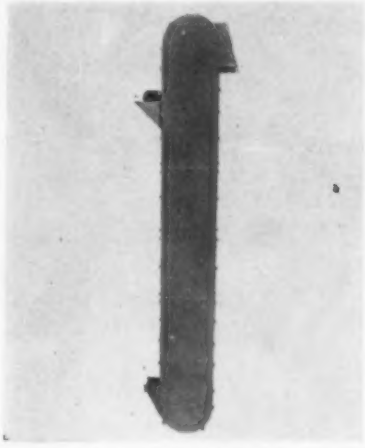
Please send DURACLONE information to:

NAME_____

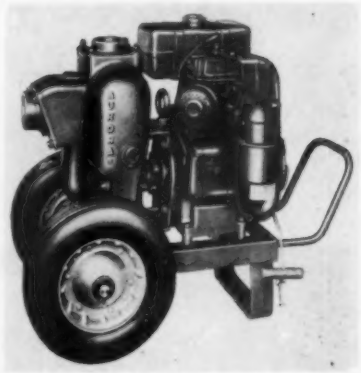
ADDRESS_____



● Oro-Lok, Kensington Steel Company's new wear-resistant lining for cement and ore grinding mills, features renewable lifter bars and abutment strips made from Oroloy, a high-manganese steel specially alloyed and heat-treated to give lifter bars the toughness and hardness to withstand severe working conditions. Lifter bars butt against liner plates which butt against the abutment strips which absorb all lateral stress. Abutment strips, welded to the shell at the location of the bolt holes, strengthen the shell and hold the liners firmly in place. **(70)**



● Capacities up to 9 t.p.h. are possible with the Model 30 "Buck-El," a new bulk material elevating conveyor designed by the Bucket Elevator Company. The Model 30 "Buck-El" is available in heights up to 30 ft., with either chain or belt mounted buckets. Made of standard components, the Model 30 is easily disassembled for maintenance, repair, or cleaning. For capacities up to 90 t.p.h. and heights up to 50 ft. the Type "S" bucket elevator is available. **(71)**



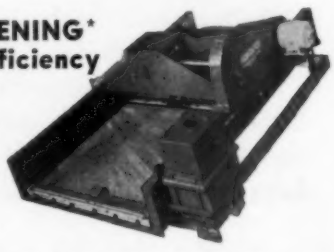
● Five new models comprise a new series of portable, self-priming gasoline engine-driven pumps recently introduced by the Aurora Pump Division of the New York Air Brake Company. The new pumps, designated Series M, are quick priming, self-cleaning, and have high head output. Maximum capacity of the smallest pump of the Series M models is 105 g.p.m. The largest model will deliver up to 351 g.p.m. Inlet and outlet connections range from 1½ in. to 3 in. The pump and engine are mounted on a common base. Because of the portability of the new units, they are suitable for operation remote from the electric power source. The Aurora 5M and 8M pumps are equipped with carrying handles or spring-mounted pull skids. **(72)**

New Model E Leahy® INTEGRATED HEAT SCREENING* Sets New Standards of Efficiency

FlexElex jacket heating is not an extra or separate attachment. For the screening of lime, ag-lime, silica sand and other damp materials, the Leahy screen integrated with FlexElex heating assures superior screening . . . lower power consumption because of direct runs of oversize bus bars that completely eliminate flexible connections.

Profit by this complete integration of all electrical and screening factors. Send for Bulletin 16-EH.

* Copyright 1957

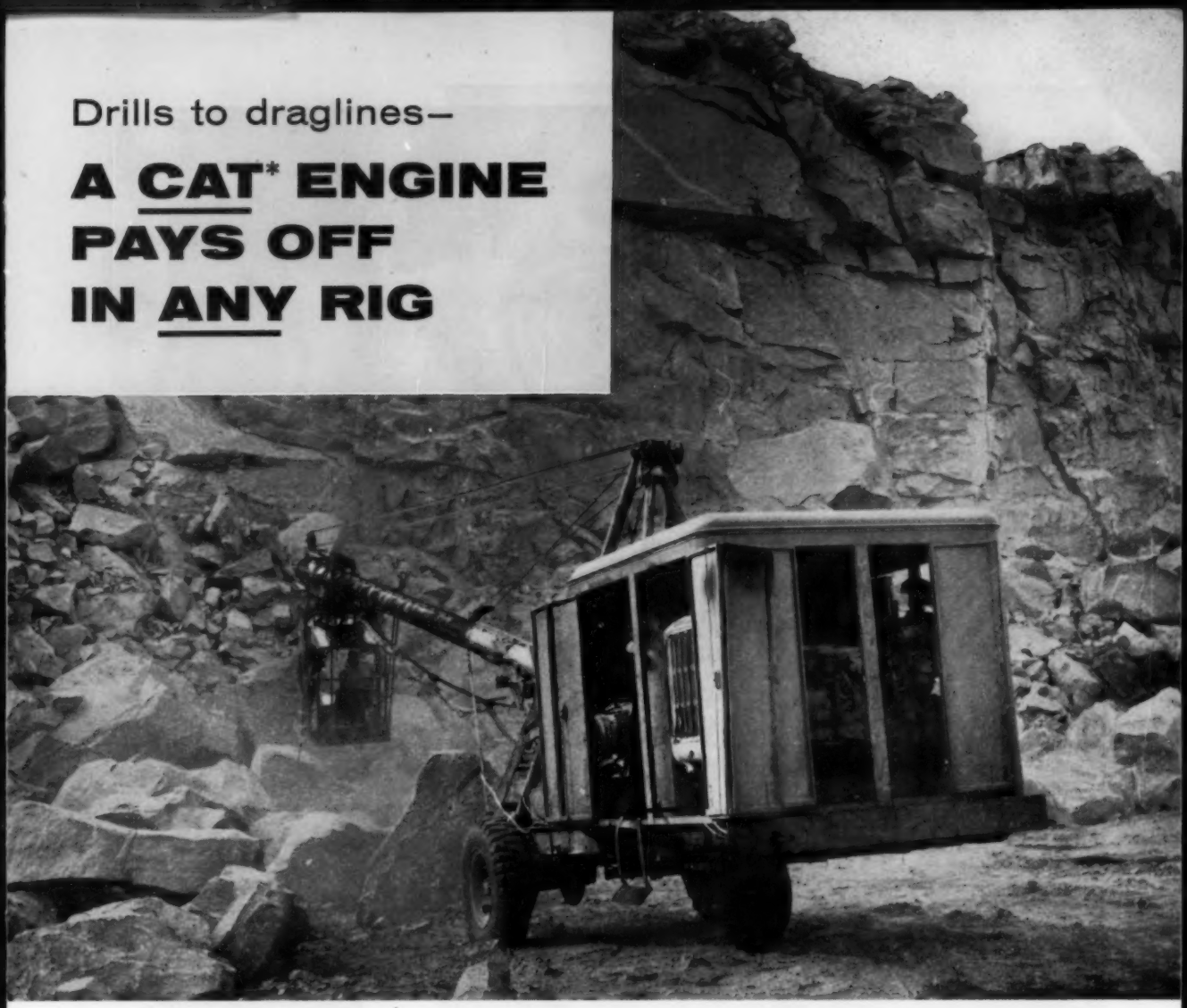


Made by the Original Deister Company
Established 1906

THE DEISTER CONCENTRATOR COMPANY
911 Glasgow Avenue, Fort Wayne, Indiana

Drills to draglines–

A CAT* ENGINE PAYS OFF IN ANY RIG



A Caterpillar D318 Engine provides power for the compressor and drill on the end of the boom at Bryan Rock & Sand Co.'s quarry at Rolesville, N. C. Working 10 hours a day in hard rock, this rugged Cat Diesel pays off in power. "We've had very good service from this equipment," says J. D. Stowe, superintendent.

This is a typical installation of a Caterpillar Engine. There's a rugged Cat Diesel for practically every excavator, compressor and other quarrying equipment ever built. The D318 shown here delivers 119 HP. There are other compact, versatile, easily installed Caterpillar Engines in a range up to 650 HP (maximum output capacity).

All of them have such Caterpillar long-life features as "Hi-Electro" hardened crankshaft and cylinder liners, aluminum alloy bearings, highly effective fuel, air and oil filters, and tinker-free fuel injection systems. They will operate cleanly and efficiently on such low-cost fuels as No. 2 furnace oil. Their four-cycle simplicity means no cylinder ports or air boxes to clean.

Leading manufacturers can install Caterpillar Engines as original power in their equipment. Or your Caterpillar Dealer can advise you about the engine best suited to your present equipment when it's time to repower. Ask him for full facts and figures on the Caterpillar Diesel Engine or Electric Set that can do most work for *you* at lowest cost. And rely on him whenever you need skilled, factory-trained service or parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

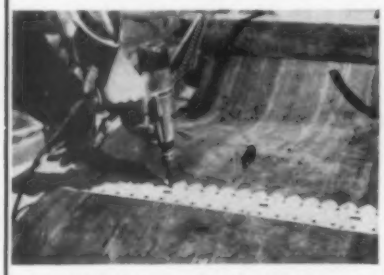
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN HEAVY-DUTY POWER

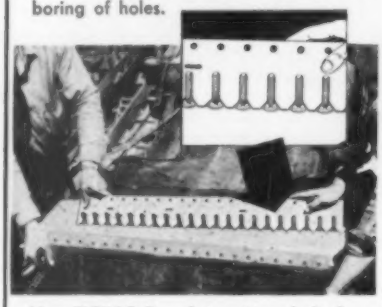
NEW FLEXCO POWER TOOLS

CUT APPLICATION TIME IN HALF

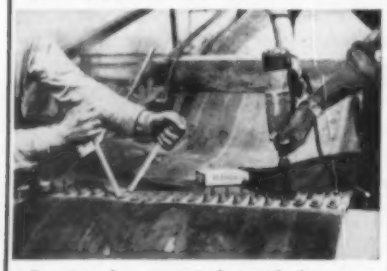
Your two man belt team can now join a belt 30" wide in 15 to 20 minutes . . . using the new FLEXCO Power Tools.



The FLEXCO Power Tool Boring Bit used with electric or air impact tool speeds boring of holes.



New FLEXCO Templet positions bolts for quick joining of belts. Reaching under belt has been eliminated.



Running down nuts is fast with the new FLEXCO Power Wrench used with electric or air impact tool. Two Bolt Breakers are used together to complete the joint.

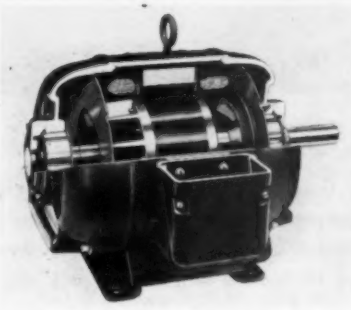
If you are interested in speeding up fastener application, order the new Power Tools from your local FLEXCO Distributor. Write for Bulletin F-112-A.

FLEXIBLE STEEL LACING CO.

4623 Lexington Street • Chicago 44, Illinois

• The H. B. Large Engineering Company has added several models to its line of Duraclone wet cyclone classifiers during the last year. They are now available in the seven sizes shown, ranging from 6 in. to 45 in. diameter. **(73)**

• Model TL-20 Tracto - Loader, a new 2-cu. yd. front-end wheel loader, has been introduced by the Tractomotive Corporation. Features of the TL-20 include power shift transmission with torque converter drive and planetary axles which provide more rim pull; there is also less strain on the axles, transmission, U-joints, and differential. The 2 cu. yd. bucket has 40 deg. of tip-back at ground level. Dumping clearance is 9 ft. **(74)**

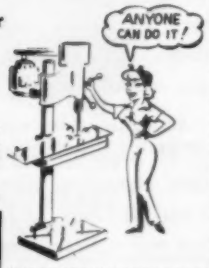


• New motors, re-rated to conform with new requirements established by the National Electric Manufacturers' Association, have been developed by Robbins & Myers, Inc. Included among the features of the series 254U motors are the elimination of "hot spots"; easy bearing inspection; simplified installation and maintenance; full-height end-head protection; and factory-installed end-head screens. **(75)**

FIRMEX PLATE

RESISTS ABRASION, SHOCK, FATIGUE, IMPACT AND CORROSION

- Designed for longer wear under rough usage
- Easy to machine
- Easy to weld



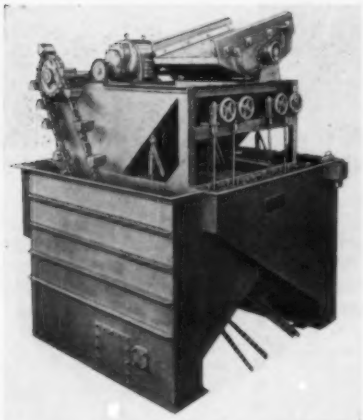
FOR YOUR SHAFTING USE THE BEST... USE FIRMEX

FIRMEX H. T. (Hot Rolled) or FIRMEX P. G. (Turned Ground and Polished - Close Tolerance)

High Tensile • Longer Wear • Easy Machining

INTERNATIONAL ALLOY TOOL STEEL CO.

4531-33 St. Clair Ave. Cleveland 3, Ohio



• An improved steel jig for ore processing has been introduced by the McLanahan and Stone Corporation. This self-contained two-cell unit separates valuable solids from waste material by jigging. All jigging is done under water within the jig compartments. Material is sized so that pieces of ore are not mixed with larger pieces of rock of the same weight and carried out as waste. Components include a gear reduction motor with roller chain drive, and self-aligning roller bearing. **(76)**

• An air-motor operated lubricant pump which incorporates a steel cover that can be clamped in 30 seconds to any standard 25 to 50 lb. original refinery container has been announced by the Lincoln Engineering Company. The pump assembly includes a carrying handle for easy portability. According to the manufacturer, the pump will dispense all pressure gun lubricants in any weather. The pump is equipped with a 6-ft. high pressure hose and a control valve with a curved extension for contacting hard-to-reach fittings. **(77)**

American HAMMERMILLS OFFER...

"AC5 Series"
Made in 4 sizes and two types. Capacity to 250 T. P. H.

Front Feed — For minimum of fines.

Center Feed — For maximum of fines. (Illustrated at left)

...A Size for Every Tonnage

"30 Series"
Made in 4 sizes. Capacity up to 100 T.P.H.

...from Roadstone to Agstone

"24 Series"
Made in 4 sizes. Capacity up to 50 T. P. H.

Write for Bulletin—"Better Stone Crushing"

American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers

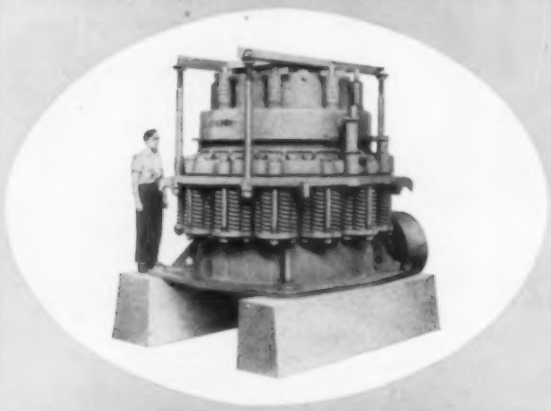
1059 Macklind Ave. St. Louis 10, Mo.

SYMONS® PRIMARY GYRATORY CRUSHERS

These gyratory crushers are built for big tonnage, heavy duty primary breaking in 30″, 42″, 48″, 54″, 60″ and 72″ feed opening sizes, for capacities up to 3500 or more tons per hour.

SYMONS VIBRATING BAR GRIZZLIES

Built for heavy duty large capacity primary scalping service. Particularly effective when handling wet, sticky or gummy rock. Will handle feeds up to 30″ and larger.

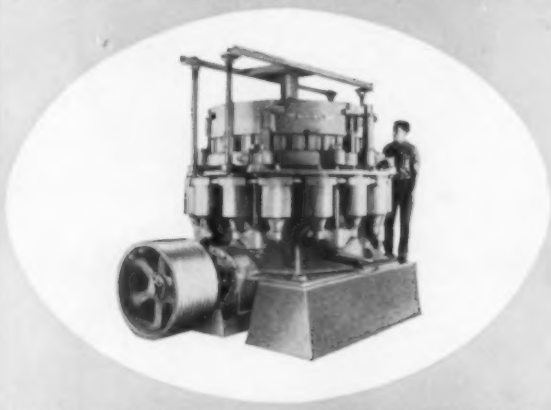


SYMONS CONE CRUSHERS

For secondary and finer reductions, Symons Cone Crushers, in both Standard and Short Head types, are built in sizes ranging from 22″ to 7′ in diameter, for capacities from 6 to 900 or more tons per hour.

SYMONS HORIZONTAL VIBRATING SCREENS

Permit level, positive, large capacity screening of extreme accuracy. Built in single, double and triple deck types in a wide range of widths and lengths. Dust housing available for handling multi-aggregate bituminous mix in asphalt work.

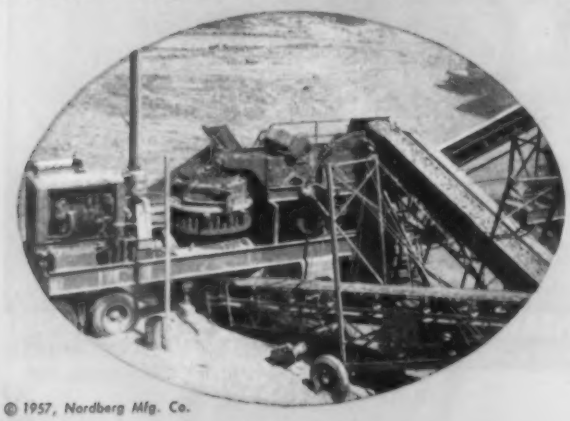


NORDBERG GYRADISC® CRUSHERS

Built to supplement the world renowned Symons Cone Crusher, the Nordberg Gyradisc provides a medium for the profitable production of sand sizes of specification material.

NORDBERG GRINDING MILLS KILNS—DRYERS and COOLERS

Built to meet specified conditions for wet or dry processing in the manufacture of cement and numerous other processes where friable material must be comminuted to fine sizes. Mill types include Rod, Ball, Pebble, Tube and Compartment types in sizes from 6′ to 13′ diameter and up to 50′ in length.



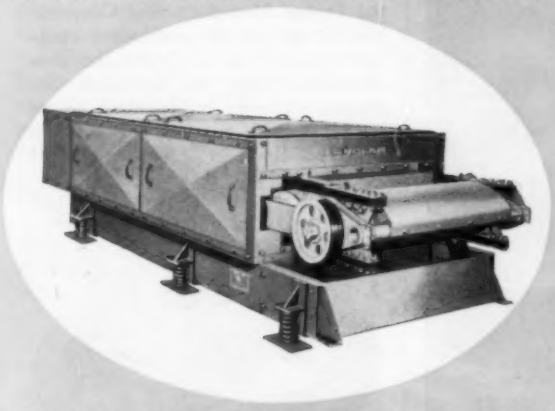
PORTABLE PLANT SERVICE

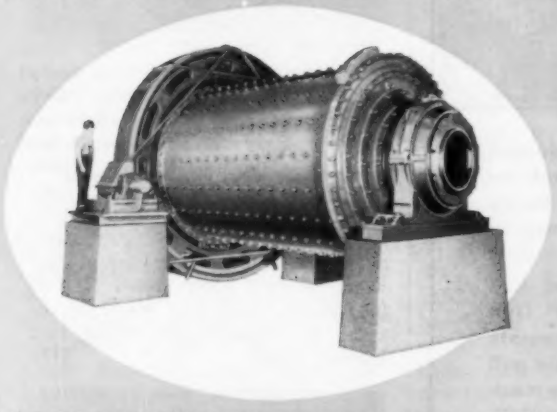
Increasing numbers of portable plant operators are now using Symons Cone Crushers for big capacity of fine product . . . such as this Cedarapids Model 4-ICS portable intermediate crushing plant utilizing a 4′ Symons Cone Crusher.

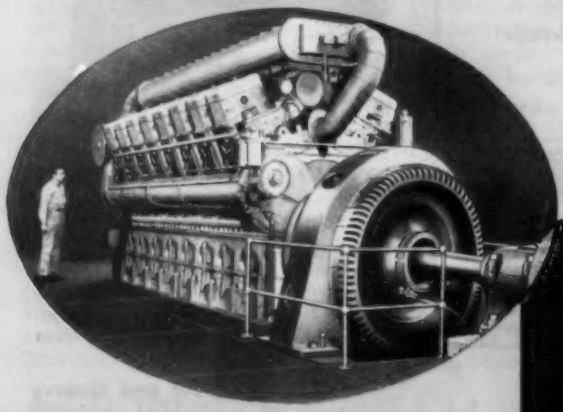
NORDBERG ENGINES

Ranging from small "packaged" power units to large stationary engines for base load and standby power, Nordberg engines are built in a wide range of types for Diesel, Duafuel® and Spark-Ignition Gas operation, in sizes to over 12,000 hp.

© 1957, Nordberg Mfg. Co.







BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957 · AMERICAN ROAD BUILDERS ASSOCIATION

NORDBERG MACHINERY

to produce BIG TONNAGES of Specification Aggregate, Bituminous Materials, Sand and Cement

NOW—more than ever before—as you plan production to meet steadily increasing demands for big tonnages of specification aggregate, bituminous materials, sand, and cement—*your best buy is Nordberg* . . . machinery that is used throughout the cement, aggregate and construction industries for maximum, continuous production of big tonnages at lowest possible cost.

This dependable line of machinery has established a solid reputation throughout the world as proved in use by leading producers and contractors in the construction of highways, dams and hydro projects, bridges, as well as commercial and residential buildings.

Whether you are a contractor, operator, construction superintendent or design engineer, it will pay you to specify and use Nordberg Crushing, Screening and Grinding Machinery for both stationary and / or portable service.

See the Nordberg Exhibit at the Road Show in Chicago—or write for literature on the machinery you need.

SYMONS . . . *a registered Nordberg trademark known throughout the world.*

Q157

NORDBERG MACHINERY NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON

TORONTO • MEXICO, D. F. • LONDON • GENEVA • JOHANNESBURG

cut costs on big quarry jobs!

DAVEY

ROTARY DRILLS

Davey Rotary Drill operated by G. Edgar Harr Sons, well drillers, Lutherville, Md.

For faster, more economical drilling . . . increased production at lower cost, leading quarry and open-pit operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are easy to set in drilling position.

Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast

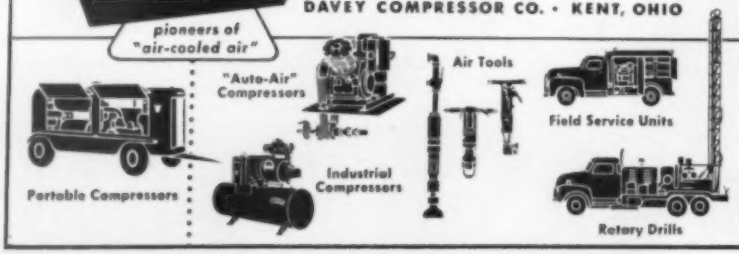
AA-1665

Write for full details!

DAVEY

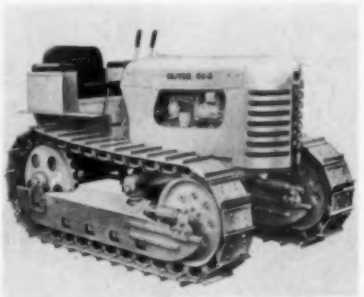
pioneers of "air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO

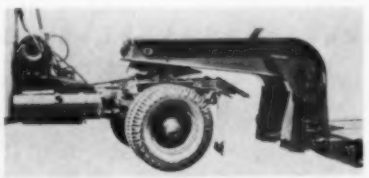


ASSEMBLED VIEW OF TAPER-LOCK DOUBLE STRAND SPROCKETS WITH DODGE ROLLER CHAIN

• Double strand roller chain sprockets that do not require reboring or other machining for installation on shafts are being added to the Taper-Lock sprocket line now offered by the Dodge Manufacturing Corporation. Available in pitch sizes ranging from ½ in. to 1 in., the new sprockets meet the demand for greater capacity roller chain drives with the easy-on, easy-off features of Taper-Lock. **(78)**



• Powered with a 21.8 d.b.hp. gasoline engine, this Oliver Model OC-4 crawler tractor mounts a full range of working attachments, both front and rear. Four lower track wheels provide maximum track surface contact for greater push-pull power in heavy going. The heavy-duty, easy-shift, four-speed transmission delivers forward speeds from 1.55 to 5.23 m.p.h. with 1.80 m.p.h. in reverse for rapid cycle dozing and loading work. **(79)**



• A new carryall with a removable gooseneck, designed by the Fruehauf Trailer Company, provides a quick, convenient front-end system for unloading heavy equipment. The operations of coupling and uncoupling the carryall from its tractor can be accomplished easily in minutes, without stress or shock to the load. **(80)**

Labor Developments

Drive for Shorter Working Hours

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

THE AFL-CIO *Collective Bargaining Report* recently made the following statements: "Several of the larger unions have each recently announced that they intend to seek a reduction in hours of work in future negotiations.

"The United Auto Workers, the United Steel Workers, the International Association of Machinists, and International Union of Electrical Workers have each stated that a shorter work week will be a major bargaining objective.

"The convention last month of the Metal Trades Department, speaking on behalf of workers in federal ship yards, similarly focused on hours reduction by urging the Federal Government to move towards a six-hour day for its employees."

This sounds as though tough going may be expected by many employers on the shorter-hours-of-work issue. Before becoming alarmed, however, an employer should examine the facts as to the experience with shorter work hours and learn how these trends develop.

Less than 40-Hour Week

Despite the announced intention of these unions, regular work weeks of under 40 hours are still rather uncommon and are rarely found in the mass production industries in which these unions are strong. A recent survey of the U. S. Bureau of Labor Statisitics shows that only 7 percent of plant workers are now on schedules of less than 40 hours per week and only 17 percent of all workers (plant and office) are on these shorter schedules. The larger figure is explained by the fact that many non-manufacturing industries such as finance, insurance, and real estate employ large numbers of white collar workers, among whom the under-40-hour schedules are most common.

There are, however, certain industries in which work weeks of under 40 hours have become prevalent. Among these are the ladies' garment industry, in which a 35-hour work week was introduced during the Great Depression as a work-sharing device. That figure increased to 40 hours in most markets; however, in the last few years, the industry again negotiated 35-hour work weeks, to take place immeediately or in two steps—first to 37½ hours and then, generally a year later, to 35 hours. Usually, overtime rates are applicable to all work beyond the new schedule, but in some cases penalty overtime rates are applicable only after a greater number of hours—*e.g.*, 40—are worked.

The printing industry is perhaps the next most prominent place where major reductions from 40 hours were negotiated in the years following World War II. Weekly schedules of 36¼ to 37½ hours are common in this industry. They were accomplished primarily by reducing the 8-hour work day (by 30 or 45 minutes) to seven and a half or seven and a quarter hours.

There are other industries having work weeks shorter than 40 hours, for example, the brewing industry, in which approximately 50 percent of the employees are on schedules of 37½ hours a week. In the baking industry work weeks under 40 hours have been negotiated in a number of major cities, particularly for machine bakeries. Similarly, in the newspaper publishing industry the printing crafts and also the employees in the editorial and clerical departments are frequently on 35-hour weeks. Well over 10 percent of the building tradesmen in the construction industry have work days of less than 8 hours and work weeks of less than 40 hours. Shorter work weeks are also found in many instances in coal mining, retailing, longshoring, and lumbering.

Office workers and employees of municipal and state governments as well frequently have shorter work weeks. Finally, mention must be made of the rubber industry. In Akron, Ohio, where a large part of the tire and tube production is centered, there has been a 6-hour day and a 36-hour week since the 1930's.

Workers' Attitudes

In contrast to the official position of their union leaders, there is no substantial evidence that most of the workers really want and are fundamentally demanding more leisure through a shorter work week. The problem which is encountered in most plants is not that the workers complain about being required to work beyond the standard work week, but rather that overtime work and the premium pay which goes with overtime work is not available in sufficient quantity. Workers appear to be eager *to increase their incomes*, not to work fewer hours.

The results of a survey made by the Rubber Workers Union in the Akron area are especially interesting. Officials of that union have estimated that about 10 percent of Akron rubber workers hold a full-time second job of 6 or 8 hours per day. In addition, another 30 to 40 percent of the workers hold part-time jobs. Does this mean that since shorter work weeks are not really a fundamental aspiration of most workers, employers really do not have to be worried about the demand for shorter hours?

What Proposals to Expect

Not necessarily. While the demand for a shorter work week may not be pressed vigorously except in a few industries, an increasing number of demands which will result in fewer working days per year can certainly be expected. As a matter of fact, this trend has long been under way. Paid vacations are a relatively new phenomenon for much of the work force, but the practice has now become widespread, and the length of the vacation period appears to be increasing.

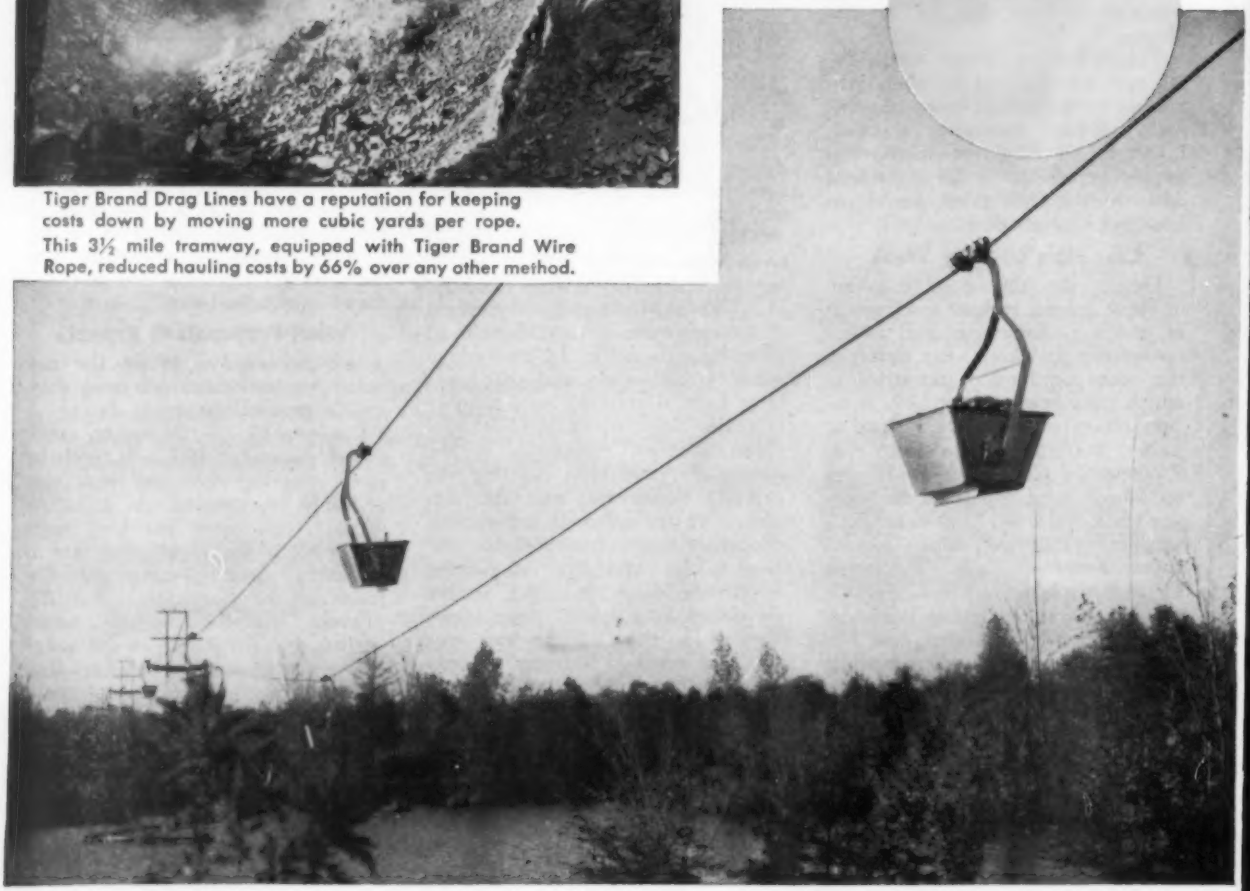
Similarly, the number of paid holidays is growing. These trends can certainly be expected to continue. For example the demand for both a winter and a summer vacation has already been faced in several situations. There is also some talk of leaves of absence, such as the

(*Continued on page* 88)

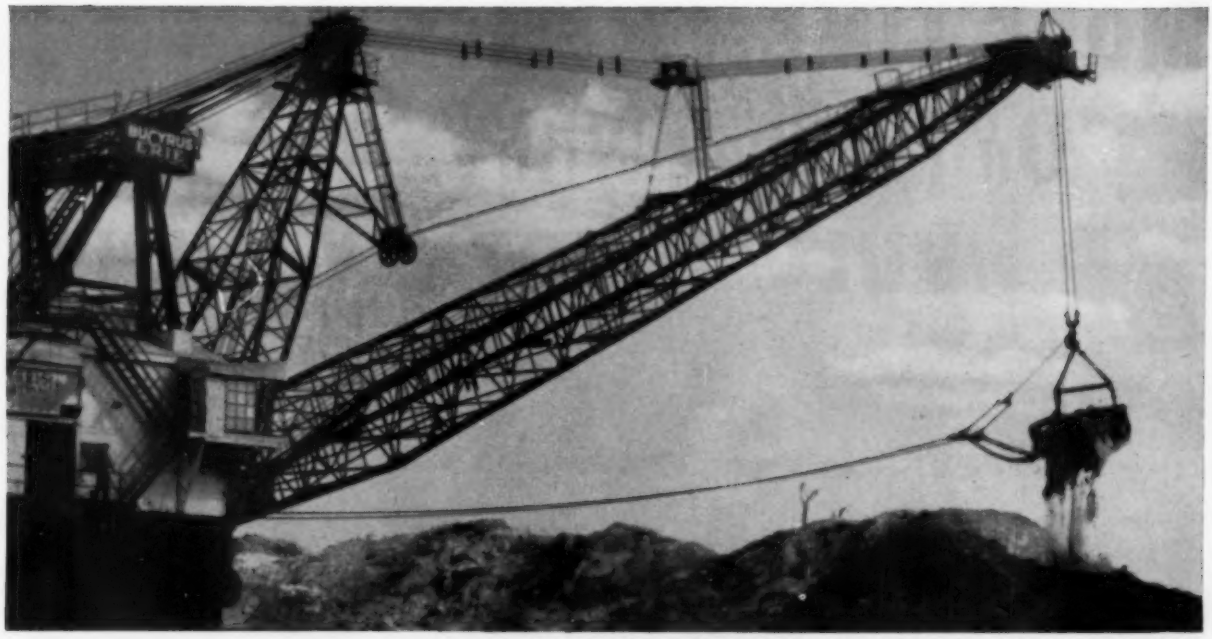
WHETHER YOU SHOVEL IT...

DRAG IT...

OR HAUL IT



Tiger Brand Drag Lines have a reputation for keeping costs down by moving more cubic yards per rope. This 3½ mile tramway, equipped with Tiger Brand Wire Rope, reduced hauling costs by 66% over any other method.



Dipper hoist ropes take a beating from abrasion, shock loads and constant bending. That is why you need a rope that's engineered for the job — Tiger Brand.

BY AIR... Tiger Brand delivers top yardage per dollar spent for wire rope

When you are moving materials in a big way, the cost per cubic yard may be a deciding factor in the type of equipment and wire rope you select. Whether you use shovels, draglines or tramways, the problem is to pick the rope that will give the best possible service on your job.

On shovels, Tiger Brand Wire Rope has run up some amazing records. Tiger Brand shovel hoist ropes are designed to combine flexibility, strength and resistance to abrasive wear as required by this class of service.

On draglines, where a lot of abrasive wear and abuse are encountered, Tiger Brand drag ropes have demonstrated time and again that the right rope for the job is the most economical.

For tramways, Tiger Brand track cables and traction ropes are recognized leaders.

For a personal guide to rope selection, send the coupon.

American Steel & Wire Division
Rockefeller Building
Cleveland 13, Ohio

Please send me your Wire Rope Recommendation Book, "The Right Rope for the Job."

Name .....
Company .....
Address .....
City ..... State .....

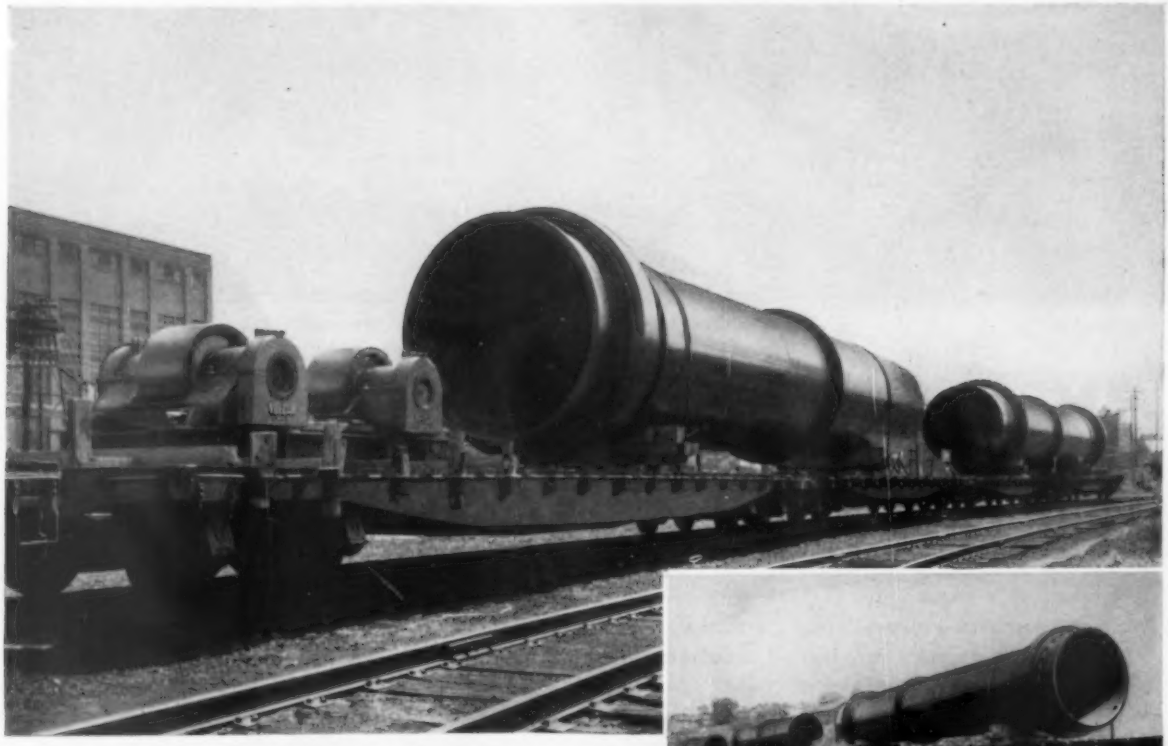
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

MORE LIME...CEMENT
On The Way With...
VULCAN ROTARY KILNS



Designed and completely built by VULCAN of Wilkes-Barre, the above sections are now assembled and in operation at the United Cement Co., Inc., Montevallo, Alabama. The kiln size is 9′ x 300′ including an 8′ x 80′ cooler. This latest VULCAN KILN, made with a heavy, all-welded steel shell, using 5 tires, is mounted on VULCAN's latest type supporting rollers, all of which are automatically lubricated and easily adjusted to compensate for wear or moderate misalignment. The whole unit is the most modern in design, including outstanding VULCAN features which places VULCAN among the leaders in this field.

Write today for Bulletin A-442 on Rotary Kilns, Coolers, Dryers, Retorts, and other dependable equipment. If you have a problem, VULCAN will gladly assist you.

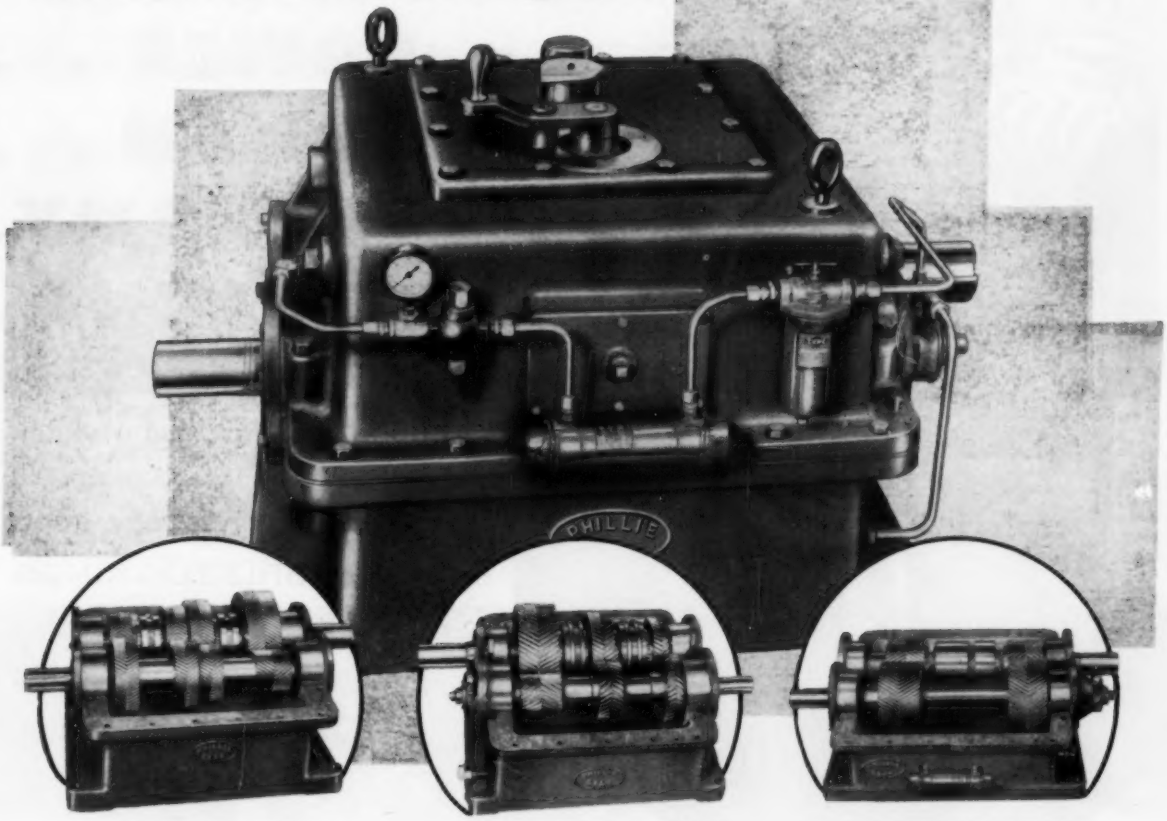
Any information on items listed below will be sent to you immediately:

- Rotary Kilns, Coolers and Dryers
- Rotary Retorts, Calciners, Etc.
- Improved Vertical Lime Kilns
- Automatic Quick-Lime Hydrators
- Briquetting Equipment
- Heavy Duty Electric Hoists
- Self-Contained Electric Hoists
- Cast-Steel Sheaves and Gears
- Steel Plate Fabrications

VULCAN IRON WORKS

WILKES-BARRE, PA., U.S.A. CABLE ADDRESS "VULWORKS WILKESBARRE" ESTABLISHED 1849

Get the exact speed you need, by merely turning the lever... with these *standardized* all geared units



4 SPEED UNIT **3 SPEED UNIT** **2 SPEED UNIT**

These self-contained, compact, all-geared change speed Units are available in 2, 3 and 4 speed changes, providing definite ratios of speed reducing, speed increasing (or a combination of both) to meet virtually any selective speed drive requirement. They are designed to fill industry's need for an efficient, precision-built standardized line . . . eliminating the high costs and delayed deliveries usually associated with specially designed units. They are ideal for use on wire drawing machines, large machine tools, mixing equipment, sludge pumps, extruding machines, dry cleaning equipment, etc. Gears and pinions are Continuous Tooth Herringbone type. Shafts, bearings, clutches and housings are of the finest quality to assure the user of long, trouble-free service . . . Ratings are according to AGMA Standards, with allowance for 100% overload in starting and for momentary shock loads. These units are designed to permit the heavy overhung loads resulting from the use of sprockets or pulleys.

Send for Catalog CSU-54, on your Business Letterhead.

phillie gear®

PHILADELPHIA GEAR WORKS, INC.

ERIE AVE. & G STREET, PHILADELPHIA 34, PENNA.

Offices in all Principal Cities

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

Virginia Gear & Machine Corp. • Lynchburg, Va.

You can't beat

for POWER . . . .
DESIGN . . . .
ECONOMY . .
STAMINA . .

. . . and the unusually good balance of GRIZZLY-KINGS make the big 30x42 size popular for both portable and stationary operation.

While famous Grizzly-King overhead eccentric jaw crushers are available in a full range of sizes from 12 x 36 to 42 x 48, at the present time the larger sizes are most popular due to the expanding needs for crushed stone products. This is particularly true of the 30 x 42 which can out-perform larger, competitive crushers, making it practical for and widely used in both portable and stationary plants. Its lighter weight and size with lower first and operating costs are definite advantages to the contractor who doesn't require the tremendous peak capacity of the 42 x 48 Grizzly-King, or who requires big capacity without forfeiting portability.

All Grizzly-Kings have many design and operating features of proven superiority over the entire jaw crusher field — better balance . . . larger feed opening to take larger rocks and greater feed rates . . . longer jaws for more crushing capacity and better nipping angle . . . larger bearings and shaft for longer, heavy-duty service life and lower maintenance . . . heavy flywheels for greater crushing impact and power savings. These and other advantages of these famous crushers are fully explained in Lippmann Grizzly-King Crusher Bulletin #1100B. Get your copy from your Lippmann Distributor, or write Lippmann Engineering Works, Inc., 4607 W. Mitchell St., Milwaukee 14, Wisconsin and learn the reasons behind Grizzly-King's success.

LIPPMANN *Grizzly-King* JAW CRUSHERS

- • to break rocks faster
- • that breaks rocks easier
- • of long life and lower power costs
- • to give longer service with lower maintenance

Here's how a GRIZZLY-KING'S *bite crushes at lowest costs per ton*

Here approaching the crusher is an unusually large load of stone that is only usual for a Grizzly-King. Two large shovels keep busy satisfying this Grizzly-King's appetite, hour-after-hour.

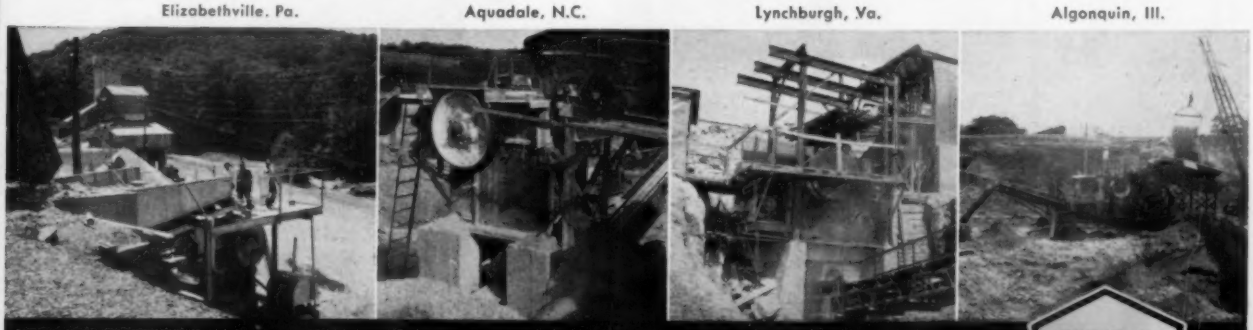
The first stone falls into Grizzly-King's jaws which are wider than others because rated size is measured at minimum jaw eccentric position instead of neutral or maximum as in ordinary crushers.

Now it has dropped into the long, scientifically-curved jaws. Their intermeshing corrugated faces, sure-grip nipping angle and non-choking throat makes every stroke a working stroke.

This shows how, without hesitation, the big rock is easily broken by the very first stroke. The long jaw with the positive nipping angle has prevented slippage, lost time and effort.

. . . and the pay-off is steady, big production at lower power and maintenance costs . . . easier controlled product size — day-after-day and year-after-year — that has increased profits and lowered costs for operators everywhere. . . .

Elizabethville, Pa. Aquadale, N.C. Lynchburgh, Va. Algonquin, Ill.



LIPPMANN

LEW

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

This closeup of the preheater at the Coplay plant, showing its connection to the rotary kiln below.

Coil Type Preheater Raises Fuel Efficiency, Capacity at Coplay Plant

improved version of earlier installations

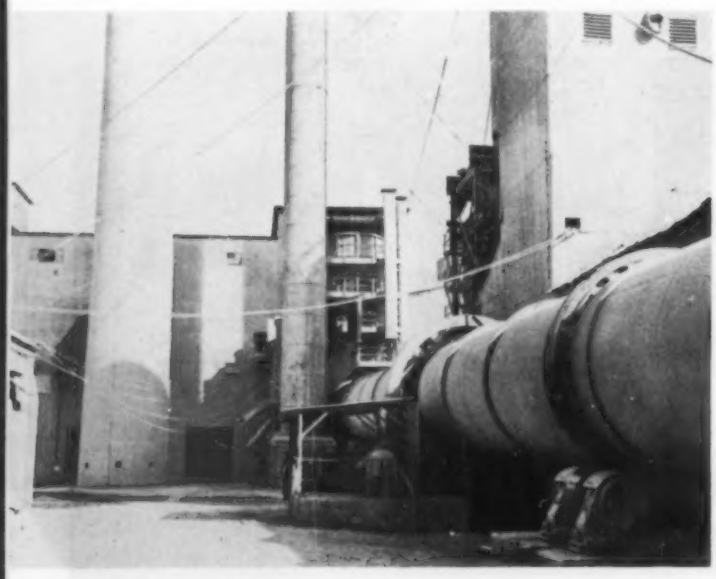
By WALTER E. TRAUFFER

Another ON THE SPOT Report

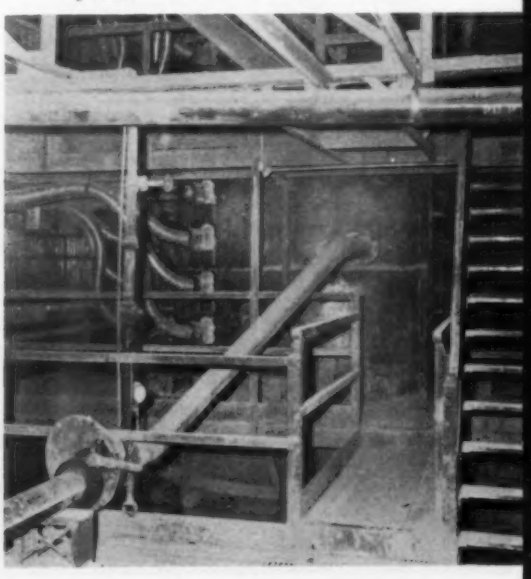
THE RAPID and constant increase in the demand for portland cement in recent years, and the prospects for a continued increase for some years to come, have resulted in the record plant expansion program now under way. New cement plants are being built and many old plants are being enlarged to meet the swelling demand. The new plants are designed along more or less of a standard pattern as are also most of the plant expansions. This is to be expected because when plants are working at full capacity, there is little incentive for experimenting with or adopting new methods. Among these plants, however, we occasionally encounter something a little out of the ordinary, such as the Grudex preheater recently installed at the plant of the Coplay Cement Manufacturing Company at Coplay, Pa.

This is one of the oldest companies in the cement industry, having been formed in 1866. Its first plant, a shaft kiln operation, was completed in that year. This was later replaced by rotary kiln plant B, which in turn was replaced in 1900 by the present plant, known as Mill C. Numerous improvements and expansions have been made over

The new 11-ft. 3-in. by 200-ft. rotary kiln, with the coil-type preheater in the background. The new concrete stack is at the left.



The feed end of the preheater with one of the raw material feed pipes in the foreground.



the years. The feature at this plant is the recent installation of a new short rotary kiln, preceded by an improved version of the original Grudex preheaters developed at this plant and installed in the early 1930's. Then the company was faced with the necessity of lowering its costs during the depression. This time there was the necessity of expanding its capacity; and space limitations, as well as its good experience with the original preheaters, resulted in the selection of this equipment.

The history of the Grudex preheater actually goes back to the late 1920's when extensive experiments were made on a small scale by David J. Uhle, then and now vice president in charge of operations, and Dr. Max E. Grunewald, then chemical engineer and now president of the company. An experimental preheating unit was installed on a 60-ft. kiln late in 1930. The results obtained were so encouraging that the company went ahead with the installation of a full-size Grudex preheater on one of its 9- by 125-ft. kilns in Plant C. This was completed and in operation in January, 1932.

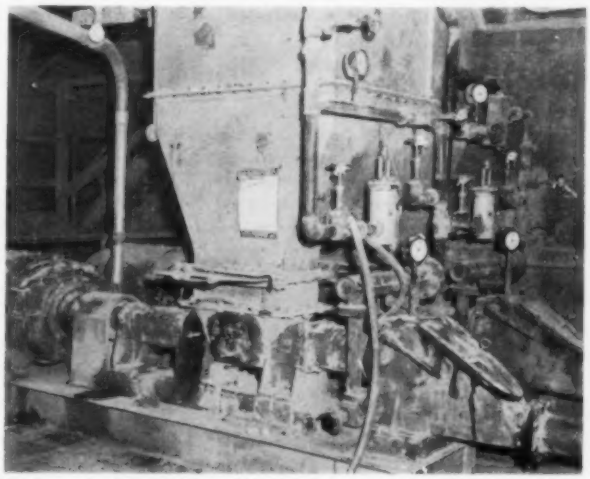
Again, the experience with the unit was successful, and an improved version of the preheater was installed on a second kiln of the same size. In May, 1934, this one was completed and both preheaters have been in operation ever since.* The first U. S. patent on this system was granted to Messrs. Uhle and Grunewald on April 21, 1931. Later patents have been granted in this country and in foreign countries.

These preheaters increased the two kilns by 40 percent—enough so that it was not necessary to operate the other two kilns until after the end of World War II. All four kilns were then operated until September, 1954, when one was taken out to make way for the new kiln. This now has provided enough additional capacity so that the other old straight kiln is not needed, and this will be dismantled soon. A new stack was built for the new kiln; and the other two preheater-equipped units will eventually be hooked into it.

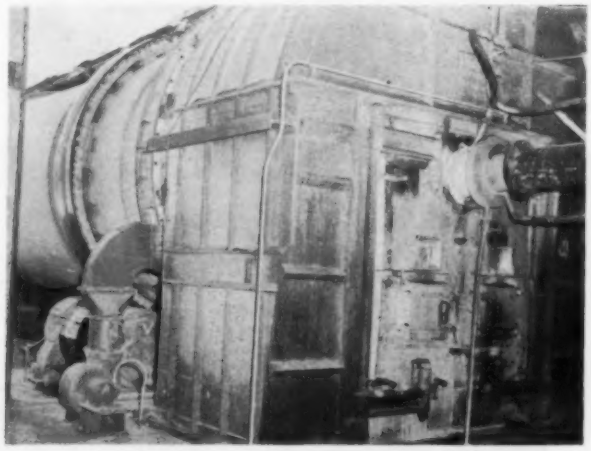
Over the years the two old kilns not equipped with preheaters used 120 lb. of coal per bbl. of cement produced. The two with Grudex preheaters used 75 lb. of coal per bbl. These two kilns, incidentally, do not have clinker coolers, which would increase their efficiency even more. The new preheater and kiln use only 58 lb. of coal or 735,000 B.t.u.'s per bbl. The coal used has varied from 12,500 to 13,000 B.t.u.'s per lb. This new kiln has an average output of 3,000 bbl. per day.

The new Grudex preheater differs little in design from the two older units, except that it is a double unit instead of a single tower. This was done only because of height limitations inside the existing building. Where space is available, the preheater is built as a single tower. This preheater is now being manufactured and sold exclusively by the Kennedy-Van Saun Manufacturing & Engineering Corporation through an agreement with the inventors.

Among the features of the Grudex preheater is the fact that there is no contact between cement raw materials and the hot gases after the latter leave the kiln; this method, it is claimed, permits complete control of alkalies and prevents their redeposition on the material. The intimate mixing of particles of raw material in the preheater tubes reportedly results in a much more homogeneous clinker; this is proved by the fact that the clinker from the preheater-equipped kiln weighs considerably more and tests higher than that from the other kilns. Since it is simple in design, the Grudex preheater has no moving parts exposed to heat, and is said to be easy to control and to require little more labor than rotary kilns alone.



The two 6-in. pumps which feed raw material to the two sets of coils in the preheaters.

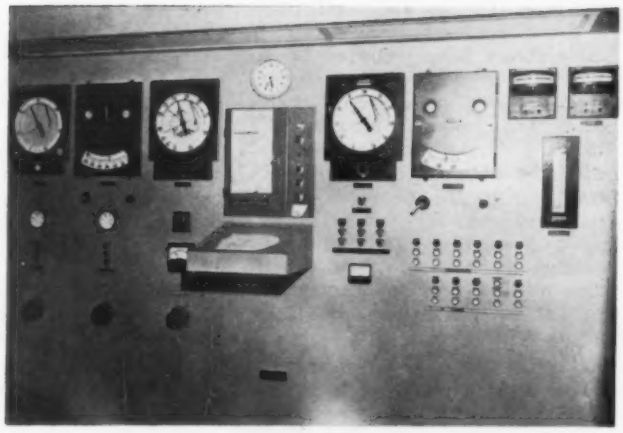


A closeup of the firing hood of the 11-ft. 3-in. by 200-ft. rotary kiln showing water-cooled burner pipe.

Raw material for these preheater kilns, it is said, need not be as finely ground as usual—in this plant it is 80 to 82 percent through 200 mesh. It is blended in the six existing silos and then fed by bucket elevator into the 75-ton steel preheater feed tank. Four Fuller-Huron Airslides inside the tank aerate the material which is then elevated by a Fuller Airlift to a small hopper over the two preheater feed pumps. Material in excess of needs overflows the hopper directly back to the tank.

The two 6-in. Fuller-Kinyon feed

** Preheater Cuts Fuel Rate 40 Percent and Lifts Capacity Like Amount,* PIT AND QUARRY, August, 1934, p. 31.



Above: A closeup of the control board for the kiln, preheater, and cooler, which indicates and records temperatures, speeds, draft, etc.

Left: The inclined-grate clinker cooler, with the breaker in the foreground.

pumps are driven by variable-speed motors which control the rate of feed to the preheater. Each pump feeds one of the two separate systems of preheating coils, each of which is 2,000 ft. long and is exposed for its entire length to hot gases. The quantity of compressed air required by the pumps is relatively small as the expansion of the entrained air in the heated coils assists in propelling the raw material through them. These 6½-in. O.D. and 6-in. I.D. high heat-resisting metal pipes were received assembled as coils. They are supported by air-cooled beams also of high heat-resisting metal. Experience indicates a life of at least 10 years in the hottest section of the preheater, after which only that part of the coil would be replaced by welding on a new section.

The preheater coils are housed in a 14-ft. I.D. steel casing which is lined with insulation and 4½-in. refractory brick; the preheater towers have steep hopper bottoms, so that dust falling out from the gases is returned to the system. Access and cleanout doors are used for lancing once daily in the same way as a waste-heat boiler.

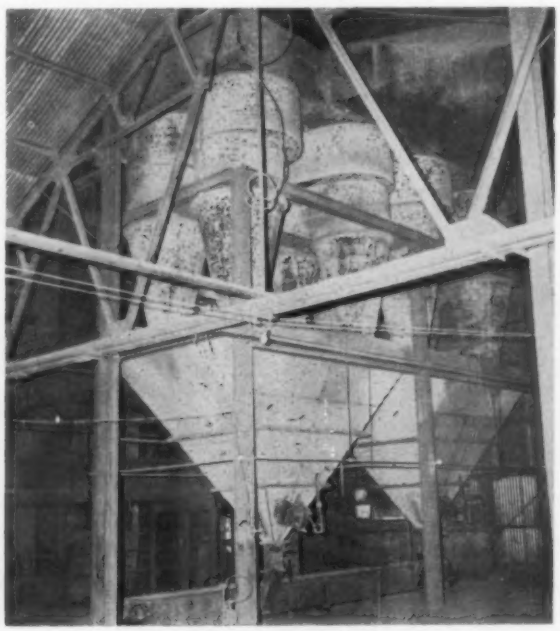
Preheated kiln feed is discharged from the two sets of coils into the kiln in the draft shadow of the kiln tail ring because of the dead air and resulting low dust loss there. At the discharge end each pipe is belled out into an enlongated ellipse.

Gases from the preheater are drawn through a Buell Van Tongeren 72x24 Type A multiple cyclone dust collector by a 150-hp. Robinson fan. Collected dust is returned into the kiln by a series of screw conveyors. The fan exhausts through the new 10-ft. I.D. by 140-ft. high reinforced Rust concrete stack.

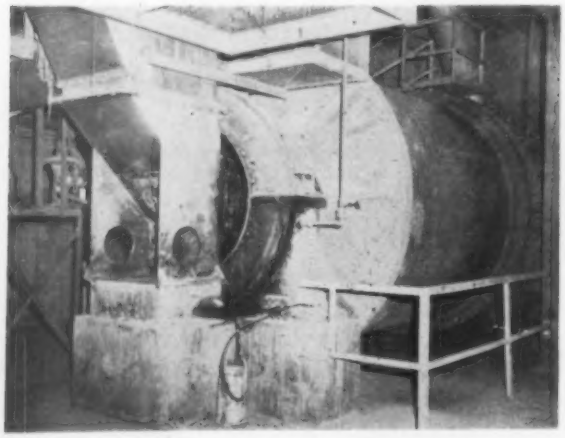
The new 11-ft. 3-in. by 200-ft. Kennedy-Van Saun all-welded rotary kiln is supported on four tires and has a slope of 7/16 in. per foot. It is lined for most of its length with regular heavy-duty firebrick, then high alumina brick and Mag-

(*Continued on page* 88)

Right: The cyclone-type dust collector through which gases from preheater are drawn before going to stack. Dust is returned to the kiln by screw conveyor below.



Below: The 9- by 9-ft. air-swept ball mill which grinds coal for direct firing of kiln.



Caterpillar announces

NEW HEAVY-DUTY RIPPERS

No. 4 No. 6 No. 8 No. 9 for CAT* Diesel Tractors and Traxcavators*

- **Ruggedly constructed to rip in extremely tough conditions—hardpan, shale, asphalt, frozen ground and other stubborn materials!**
- **Utilizes weight of tractor for positive ripping action at any depth of tooth penetration.**
- **Close mounted for excellent maneuverability in cramped quarters!**

No. 6 Ripper with No. 977 Traxcavator Three teeth standard with provision for two extra. Parallel linkage for same cutting action on all teeth at any depth. Cutting width—82½"; ground penetration—down to 16"; length behind tracks (raised) —29½". Also for use with D6.

No. 9 Ripper with D9 Tractor Three teeth standard. Ripping action is versatile—use one, two or three teeth. Any or all of them can be swung up and pinned out of the way. Teeth pivot 10° to either side. Cutting width—106"; ground penetration—down to 28".

No. 8 Ripper for use with D8 Tractor. Two teeth standard—designed to handle a third tooth. Individual tooth control as on No. 9. Cutting width—92"; ground penetration—down to 26".

No. 4 Ripper for use with D4 Tractor and No. 955 Traxcavator. Three teeth standard with provision for two extra. Parallel linkage. Cutting width—71"; ground penetration—down to 12".

Here's a tough new line of rippers developed by Caterpillar to increase the versatility of rugged yellow Cat Diesel Tractors and Traxcavators. They come equipped with alloy steel teeth with replaceable tips. Their special design and sturdy construction enable you to handle jobs that were previously considered impractical because of difficult digging conditions.

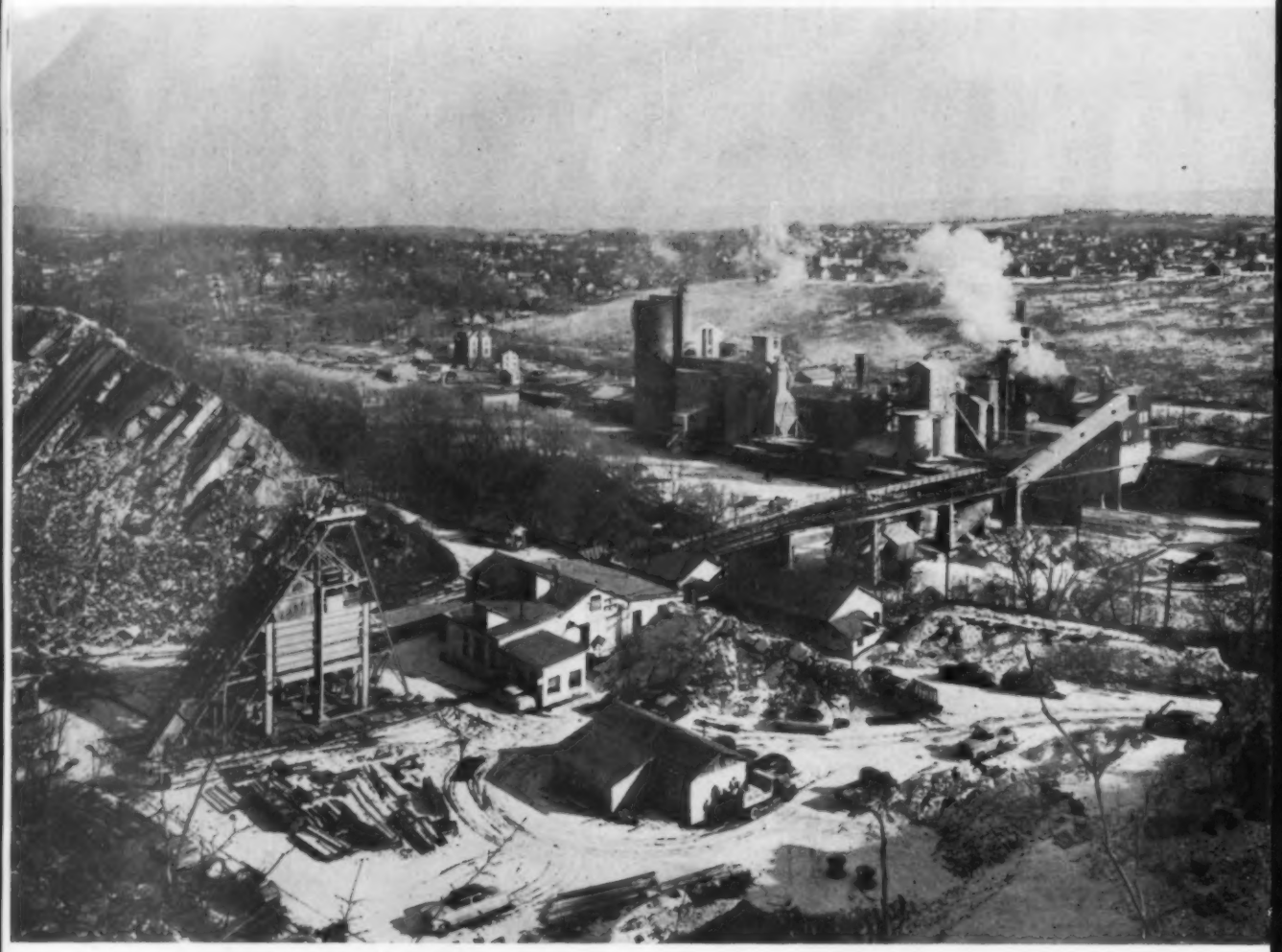
They're one more example of Caterpillar's "leadership in action" policy to produce equipment that helps you do more work at lower cost. For complete information about them, see your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

NEW HEAVY-DUTY RIPPERS FOR INCREASED PRODUCTION



By EDGAR R. MALLORY
Resident Plant Engineer
The Warner Company

Another P&D Exclusive

THE avoidance of stream or air pollution becomes constantly more important to manufacturers because of mounting public pressure and increasingly strict state and municipal regulations.

A firm that has done an excellent job in solving both these problems is the Warner Company of Bellefonte, Pa., manufacturers of lime and agricultural limestone. Measures taken to control dust and gases made stream pollution control necessary as well at the Bell plant.

The Warner Company began hauling goods on the Delaware River in 1794. It is one of the nation's oldest firms, and is now also engaged in the sand and gravel and other businesses in the Delaware River area. The Bellefonte plant is the largest of the three Warner Company lime installations.

Warner Company officials had made efforts to control the dust and other materials issuing from its lime operation since this plant was opened in 1921. However, the early devices proved inadequate. Rooftops of buildings in nearby Bellefonte (population about 5,000) were snowy white—visible evidence that all the dust was not being arrested. Other control measures were tried, until the present system of wet scrubbers was installed. This method has proved quite satisfactory.

This article describes the Warner Company's wet dust collecting system for overcoming air pollution and the method developed to avoid stream pollution. Water recovered from disposal areas is pumped back for re-use to protect the purity of local fishing streams. The author also points out some of the other problems in a situation which is becoming more and more important to industries located in urban areas.

However, there are still problems that cost money and consume many hours. The slurry—containing limestone dust, carbon, and other wastes from the wet dust collecting system—must be pumped up a hill and down into a mine—some 1,700 ft. in all. Then the water which drains off must be pumped back to the collecting system, so that it will not run into nearby streams. This runoff water will kill fish, and Bellefonte is in the heart of Pennsylvania's best trout fishing area.

The water can be pumped back to the system with little difficulty, but the constant re-use makes the water exceedingly hard. As a result, a calcium hydroxide scale builds up

INDUSTRY'S PROBLEM—
The Control of Air and Stream Pollution

in the pipe, necessitating periodic cleaning out. This scale buildup and varying pumping conditions call for a pump that can perform under very difficult conditions and still withstand wear.

Such an operation costs money, of course. Equipment now in use required a capital outlay of $250,000 and there is a continuous operating expense of approximately $50,000 yearly.

At the Bell Mine the Warner Company commenced removing limestone in 1921 by sub-level mining. Called the Bellefonte ledge (actually Lowville member of Black River group of limestone), the deposit is some 60 ft. thick. It contains 98 percent calcium carbonate, and runs between ledges that are only 10 to 20 percent pure.

The Warner Company has three rotary calcining kilns in operation, and production reaches about 250 tons of lime per kiln daily. A fourth kiln, considerably larger in size than the present kilns (9 ft. in diameter and 175 ft. long), will be put in operation next spring.

Coal is trucked in from nearby mines, and the kilns are fired with pulverized coal, ground to 200 mesh. Each kiln is equipped with an induced-draft fan.

Since each kiln puts out about 70,000 cu. ft. of gas per minute and also requires two pounds of limestone for each pound of lime produced, large amounts of dust and gases are expelled into the air if the emissions are not controlled.

Settling devices used by the plant in the early days were of some value, but large amounts of dust and gases still escaped into the air. Between 1942 and 1945 cyclone collectors were installed on all three kilns in an attempt to improve dust control.

In 1949 a full-size spray tower with drip tile filters was installed on No. 3 kiln. Later it was expanded to service No. 2 kiln.

Most successful, however, was a modified type of Holland wet scrubber which was installed on No. 1 kiln in 1952; it is still used today. This device employs paddle wheels in a tank of water to create the spray which cleans the gases and arrests the dust coming from the kiln. The cyclones were removed from one of the dry collectors set up a few years previously and it was used as an exhaust stack for the scrubber.

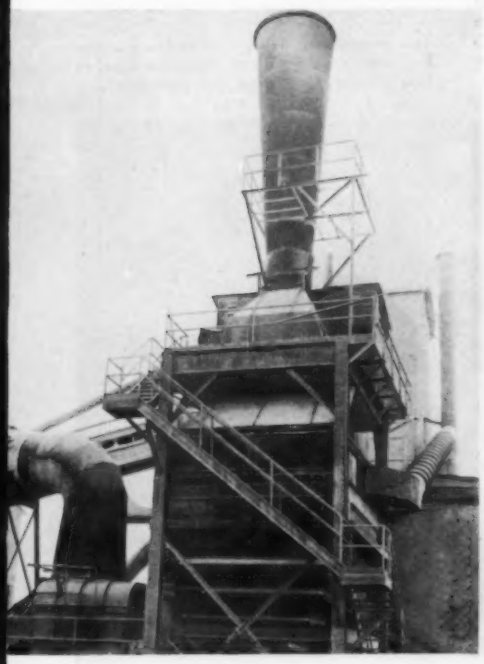
A similar arrangement has been made for the scrubber serving kilns No. 2 and No. 3. The fourth kiln will be similarly served.

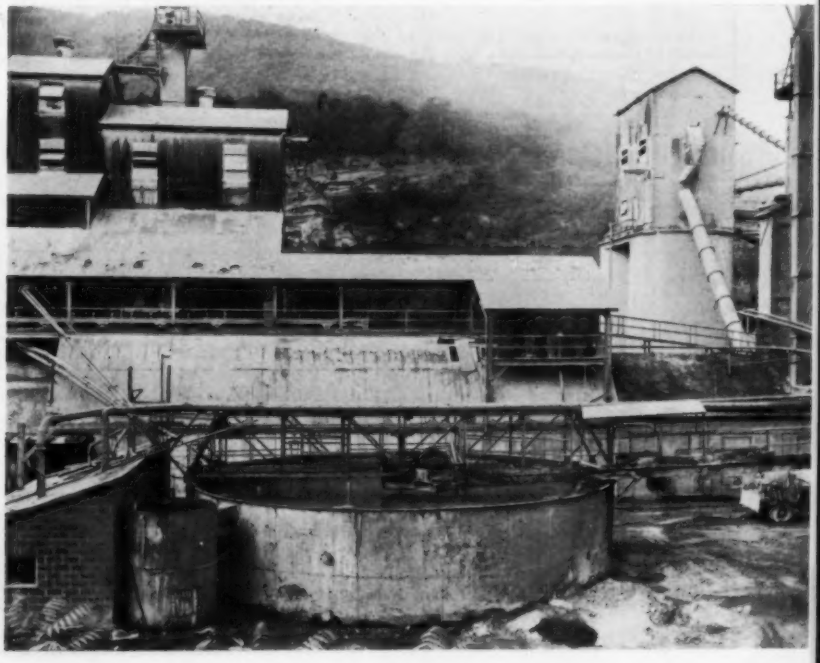
Because of the hardness of the water, the chunks of scale which form tend to block the pipelines. These chunks are kept from flowing into the thickener and the pump by a grate which is closely watched by an attendant. (It is necessary to shut down the wet dust collectors every eight days in order to clean

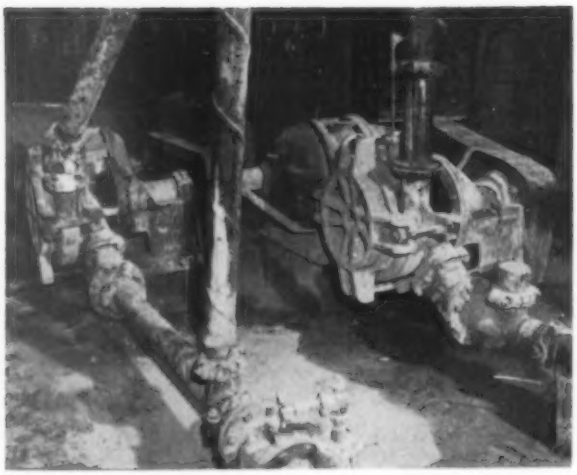
Opposite page: This overall view shows the Warner Company plant with the nearby community of Bellefonte (background). Dust from this lime plant is no longer a nuisance factor in the community. (The white substance on the ground is snow).

Below, left: This wet dust collector serves No. 1 kiln. A somewhat similar arrangement is used on No. 2 and No. 3 kilns.

Dust-laden water from the wet dust collectors flows down the flume to this Dorr sludge thickener. The smaller overflow tank and the pumphouse are at the left. Overhead lines carry clear water to the wet scrubbers.







These two pumps take slurry from the sludge thickeners and pump it to settling pits. The line at the bottom is suction.

out some five truckloads of material which accumulates.)

When the spray water passes through the collector, it reaches a temperature of approximately 140 deg. F. and picks up about 2 percent solids. It flows down a rectangular flume and discharges into a Dorr sludge thickener. This 45-ft. diameter sludge tank is 12 ft. deep and holds about 130,000 gal. of water.

Overflow enters a smaller tank where makeup water is added at 200 g.p.m. to replace that lost by evaporation.

The pumps spell success or failure in this huge recirculating operation. In the pumphouse, adjacent to the thickener tank, are two Morris Type 3R pumps and two rubber-lined pumps. The Morris pumps (one in reverse) are used to pump the underflow or slurry from the sludge thickener to settling pits. The rubber-lined pumps move 2,000 g.p.m. of clear water through horizontal lines to the scrubbers.

Pumping the slurry is exceedingly difficult because of the scale deposits which build up in the pipeline, producing considerable variance in pumping conditions and a heavy load on the pumps.

These pumps are called on to deliver approximately 150 g.p.m. against anywhere from 160 t.d.h. when operating at 1400 r.p.m. to about 35 t.d.h. when operating at 700 r.p.m. They are fitted with overhead V-belt motor mounts, and are driven by 25-hp. 1,200 r.p.m. variable-speed wound-rotor 60-cycle motors. This type of drive allows varying the operating speed of the pumps in order to meet the changing conditions.

The profile of the pump discharge lines is such that there is a tendency for siphon action. This means the pump operates against approximately 85 lb. head at start and then drops to as low as 20 p.s.i.

This pumping arrangement has been in use for about three years, after several other setups had proved unsuccessful. Therefore, when the new kiln is put in operation, a Morris Type RX pump will be installed to handle the sludge, and a second of the same type to provide water in the scrubbing tanks.

Engineers at the Warner Company say that at times the slurry pumps are called on to pump 30 percent solids; normally they operate with about 12 percent solids.

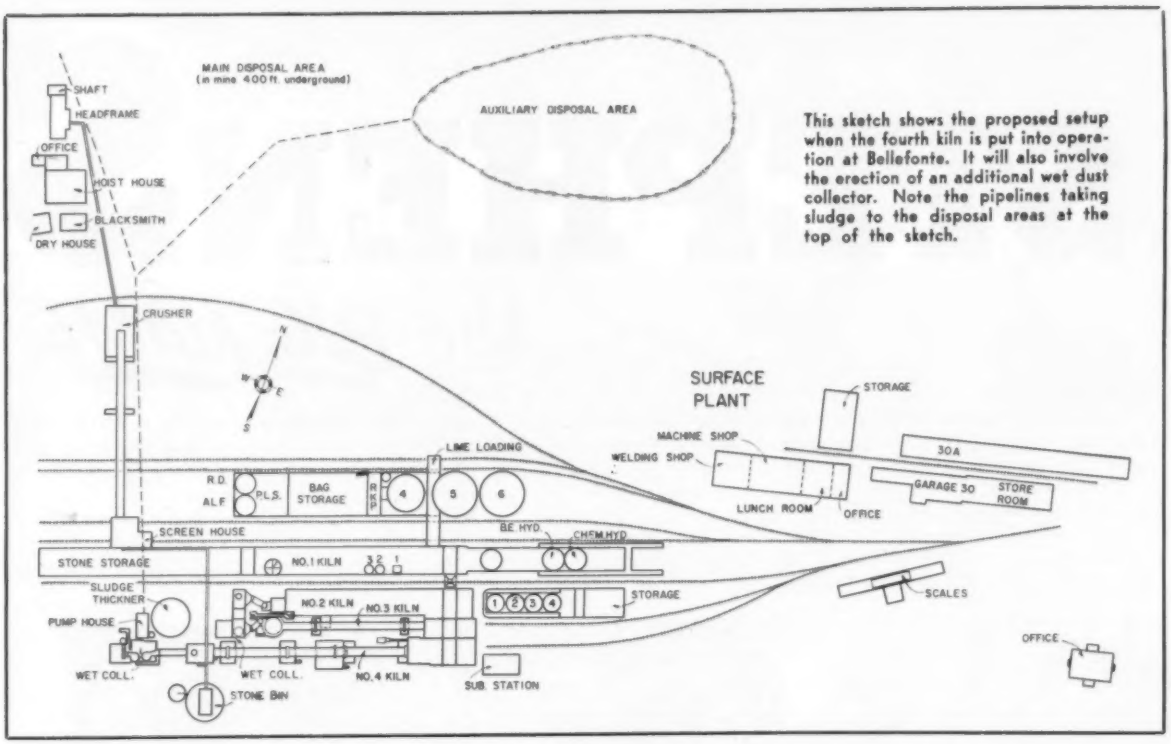
Two principal disposal areas are used. One, an area at the rear of the surface plant, requires some 900 ft. of pipeline at 160 ft. head.

The one most frequently used, however, is in an old mine. To reach the mine opening, a lift of about

The community of Bellefonte received its unusual name in about 1796 from the French statesman Talleyrand. When Talleyrand visited the area, he suggested the French words "belle" and "fonte" because of the excellent supply of clear water which served the residents. This same clear water provides some of the best trout fishing streams in Pennsylvania, which the Warner Company takes care not to pollute.

An auxiliary settling pit and some of the hardened deposits that have come from the wet dust collecting systems.

This cross section of pipe shows how calcium hydroxide scale builds up inside the pipe, so that it must be reamed out periodically.



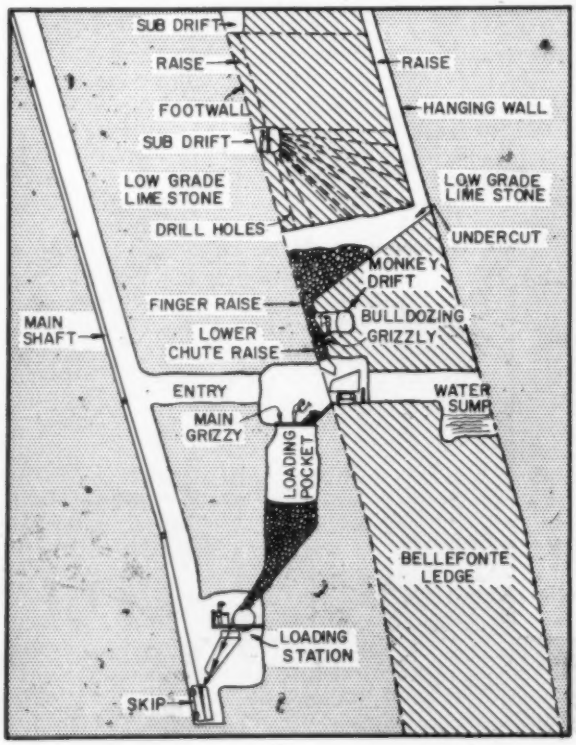
This sketch shows the proposed setup when the fourth kiln is put into operation at Bellefonte. It will also involve the erection of an additional wet dust collector. Note the pipelines taking sludge to the disposal areas at the top of the sketch.

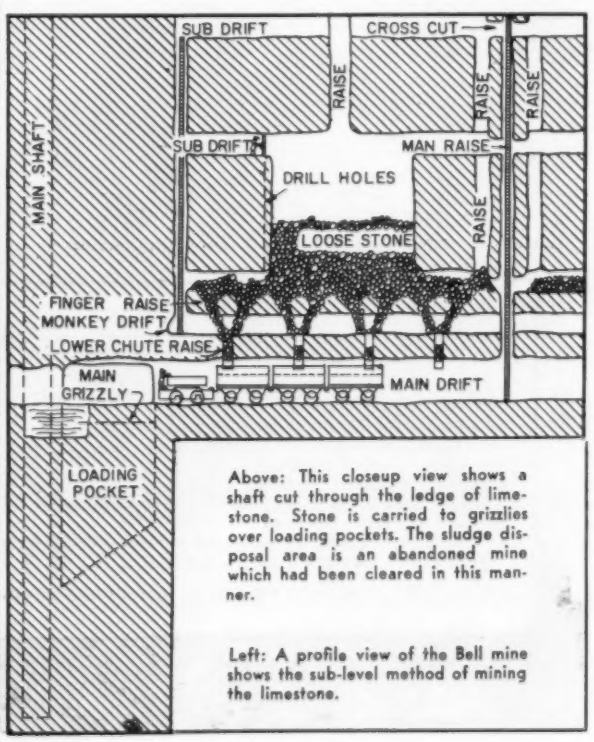
40 ft. with 700 ft. of pipeline is required. Here the pipe goes 400 ft. down an old mine shaft, then laterally another 1,000 ft.

Five drainage pipes are run to the settling areas so that the water can be pumped out and re-used. The runoff water appears perfectly clear when pumped out. However, if it is allowed to drain into streams, it produces a slime that is fatal to fish.

The calcium hydroxide scale which forms in the 4-in. pipe narrows the inside pipe opening down to 1½ to 2 in. after three or four months. When this happens, the line is taken apart and the 20-ft. sections

(Continued on page 88)





Above: This closeup view shows a shaft cut through the ledge of limestone. Stone is carried to grizzlies over loading pockets. The sludge disposal area is an abandoned mine which had been cleared in this manner.

Left: A profile view of the Bell mine shows the sub-level method of mining the limestone.

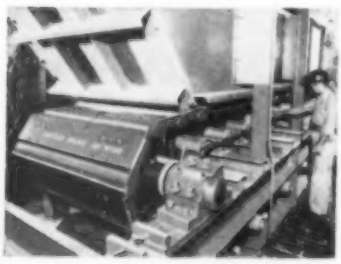
STEPHENS-

the BIG NAME

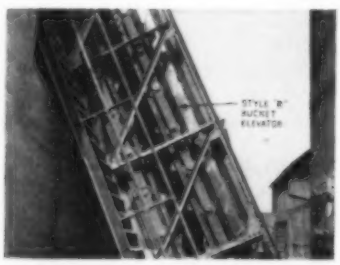
Pit and quarry operations are the roughest, toughest, testing grounds in the world for mechanized equipment. Here's where you'll find those big burly S-A engineered conveying systems proving their real quality. Here they take terrific punishment, absorbing shock, resisting vibration and abrasion, yet delivering tremendous tonnages. And they come back for more year after year. This is where the system has got to be good or be pounded into submission fast.

These are the conditions under which STEPHENS-ADAMSON has earned its big name. It's where over fifty years of experience and sheer excellence of engineering and product design pays off.

A STEPHENS-ADAMSON sales engineer is in your area. He is always ready to serve you and prove that the rock handling problem doesn't exist that can't be solved the S-A way.

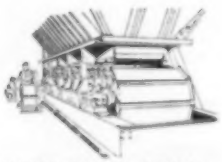


S-A builds feeders in many styles and sizes to meet any rock handling requirement. They range from heavy duty AMSCO feeders to rotary feeders for pulverized materials.

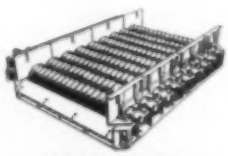


A wide selection of bucket elevator designs and sizes are available to convey rock products from lower level operations at various angles of incline for practically any loose bulk material.

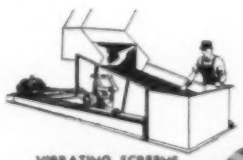
S-A screens are made in numerous types—vibrating—revolving—shaking—for screening, scalping, and washing crushed stone or gravel. S-A engineers can recommend the best designs for your own needs.



MANGANESE STEEL FEEDERS



LIVE ROLL GRIZZLIES



VIBRATING SCREENS

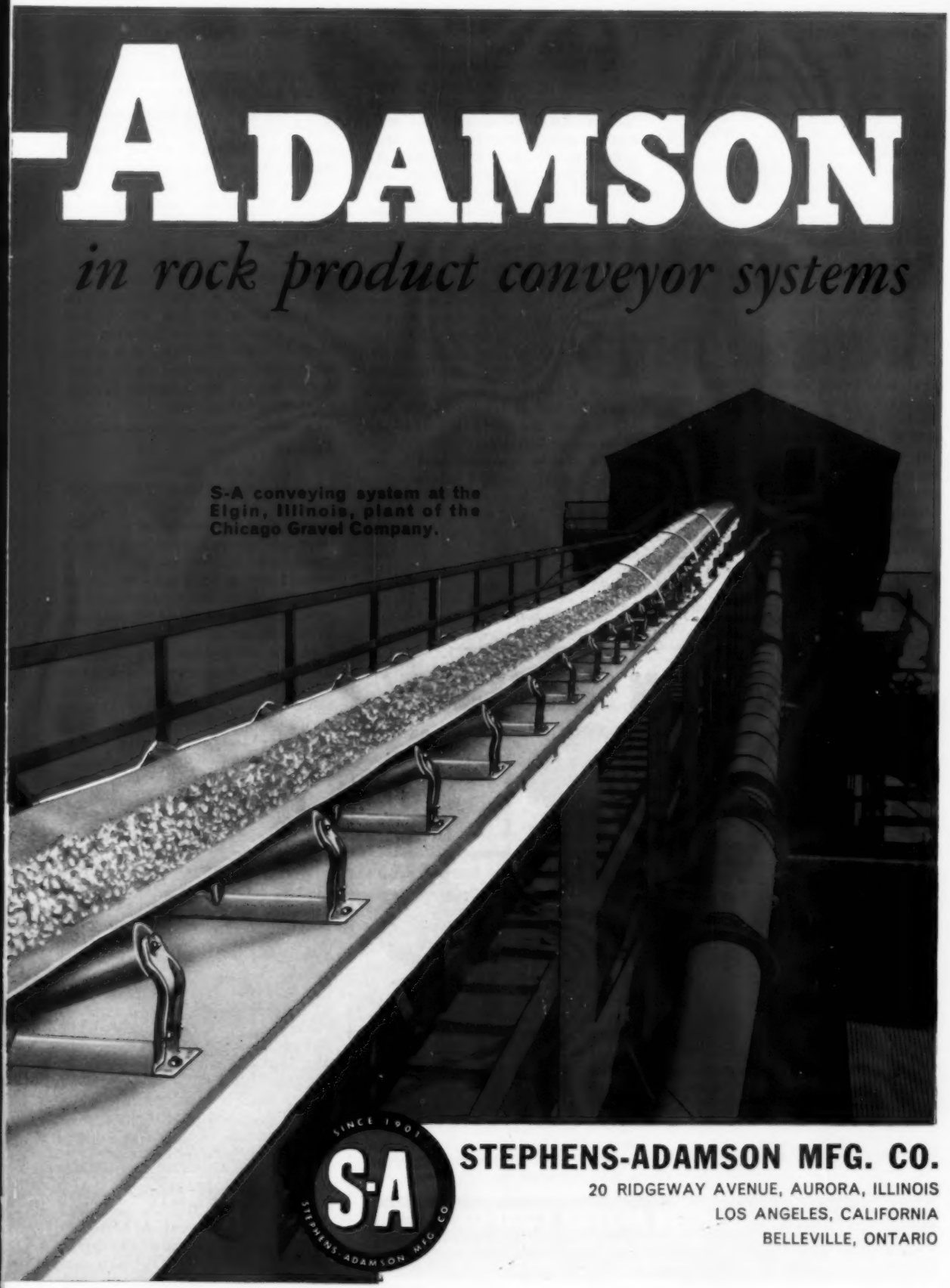
S-A manufactures a wide range of material handling products in three complete plants in U. S. and Canada.

- Belt Conveyors
- Belt, Pan & Plate Feeders
- Ship Loading Boom Conveyors
- Stacking Conveyors
- Storage & Reclaiming Systems
- "Natural Frequency" Vibrating Conveyors
- REDLER Conveyor-Elevators
- ZIPPER Conveyor-Elevators
- Conveyor Belt Cleaners
- Headshaft Holdbacks
- Grizzlies & Screens
- Centrifugal Pilers
- Bin Gates & Tunnel Gates
- Car Pullers & Spotters
- Bucket Elevators
- Skip Hoists
- SEALMASTER Ball Bearing Units

• *Write for a bulletin on any of the above products.*

-ADAMSON

in rock product conveyor systems



S-A conveying system at the Elgin, Illinois, plant of the Chicago Gravel Company.

SINCE 1901 S-A STEPHENS-ADAMSON MFG. CO.

STEPHENS-ADAMSON MFG. CO.

20 RIDGEWAY AVENUE, AURORA, ILLINOIS

LOS ANGELES, CALIFORNIA

BELLEVILLE, ONTARIO

Coplay Plant

(*From page* 80)

necon in the burning zone. It is driven by a 150-hp. variable-speed d.c. motor at a speed of 2 r.p.m. and has seals at both ends and a stationary hood.

Clinker is discharged from the kiln to a 6- by 25-ft. Fuller inclined-grate clinker cooler equipped with a breaker. A Buell cyclone collects dust from its exhaust gases. Air from the hot compartment of the cooler is secondary air from the kiln.

The kiln is fired by a 9- by 9-ft. Kennedy-Van Saun air-swept ball mill. Although this unit is larger than required to process the high-volatile West Virginia bituminous coal now being used, this size was installed so that anthracite coal can be burned when desired, since there is a trend to the use of anthracite in the Lehigh Valley. This mill is equipped with a dust collector, a classifier, and related equipment. Drying air is drawn from the second compartment of the cooler. The kiln is fired through a water-cooled burner pipe which extends 3 ft. into the kiln.

The entire system from preheater through cooler is controlled from a Kennedy-Van Saun board on the firing floor. Instruments include a radiomatic at the kiln hood for temperature control and recording; a mill level control for the coal mill; a cooler temperature regulator; draft gauges for the kiln and cooler; potentiometers for the preheater and the feed side of the dust collector, to protect the preheater coils; and the dust collector temperature regulator for entry to the coils; kiln speed controls, etc.

There is at present no way to measure it, but the preheated raw material is believed to enter the kiln at a temperature of about 1,300 deg. F. Clinker leaves the cooler at 150 deg. F. The burning zone temperature is 2,800 deg. F., and the gases leave the kiln at 1,400 to 1,500 deg. Gases from the preheater enter the collector at 800 deg.

The kiln is operated with a gas analysis of 31.5 to 32.5 percent CO_2, 0 to .25 percent oxygen (average 0.1 percent), and no CO. The system has a very low draft loss—less than 0.1 in. water gauge. The kiln and Grudex preheater combination produces about 3,000 bbl. of clinker per day.

Warner (Pollution)

(*From page* 85)

are reamed out with an air-operated rotary drill having saw-toothed bits.

A reserve line is kept handy so that it can be switched over when repairs are necessary to the operating line. Warner engineers point out that the line is kept as straight and as level as possible since a sag in the line causes faster choking up on the inside.

Several specialists have been consulted, but thus far the company has found nothing to keep the scale from forming inside the pipe. The control of air and/or stream pollution can become costly. However, it is a factor that industry must consider in order to operate harmoniously in ever-expanding urban areas.

Labor

(*From page* 71)

sabbatical years enjoyed by college professors.

Now that the number of paid holidays has generally reached six (in many cases it is up to eight; and in some it runs as high as 13 or 15), the opportunity to find new holidays for which to be paid is fast running out. It will be no surprise, therefore, to find new approaches tried. Extending the holiday somewhat is a favorite device. This has been used for some time with respect to Thanksgiving, which always comes on a Thursday and presents the opportunity for extending the holiday through Friday and into the week-end.

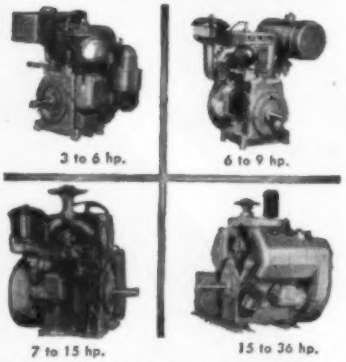
In the current year the occurrence of Christmas and New Years Day on Tuesday has created substantial pressure for extending the holiday backward through Monday, so as to achieve the long week-end. Since the long week-end has been found to be so desirable, there is also much talk about the possibility of having regular three-day week-ends. It may not be too long before this becomes a frequent union demand. Indeed, spokesmen of the International Union of Electrical Workers stated at the last convention that in their judgment shorter working hours do not necessarily require a 30- or 35-hour work week, but that they will look carefully at the possibility of more paid holidays to provide periodic long week-ends.

The conclusion which appears to emerge is that while the reduction-in-hours trend appears to be sure to continue, it is by no means certain that the 35-hour week is just around the corner.

"WISCONSIN ENGINES"

offer the solution to your

POWER PROBLEM



Next to the basic machine itself, one of your major problems is to select and specify a power component that matches both the equipment and the work it is to do . . . *most advantageously*. Wisconsin Heavy-Duty Air-Cooled Engines merit your critical and serious consideration because:

- Every Wisconsin Engine is of HEAVY-DUTY design and construction in all details . . . with the inbuilt stamina to *take it* under all operating conditions, in any climate, at all temperatures from sub-zero to 140° F
- Basic High Torque design provides the dependable *Lugging Power* that keeps the job moving through the shock-load pinches as well as maintaining a high productive power level under continuous, constant load operation.
- The Wisconsin line offers complete power selectivity to fit both the job and the machine . . . in 4-cycle single cylinder, 2- and 4-cylinder sizes from 3 to 36 hp.

You can't do better than to specify Wisconsin Air-Cooled Engine Power for *your* equipment. Write for bulletin S-195 covering the full line.

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A 8702-1½R

Cement, Nonmetals Featured at

A.I.M.E. Northeast Mining Branch Conference

By WALTER E. TRAUFFER

Another ON THE SPOT Report

THE 1956 Northeast Mining Branch Conference of the American Institute of Mining, Metallurgical, and Petroleum Engineers was held on November 8, 9, and 10 at the Hershey Hotel, Hershey, Pa. Host for the conference was the Lehigh Valley Section of A.I.M.E. This was one of the most successful meetings ever held, and drew an attendance of 358. The program held much of interest for industrial minerals producers, with an entire session devoted to developments in this field. This technical session was presided over by Sandford Cole and T. L. Kesler. At other sessions devoted to mining the papers were on metal, nonmetal, and anthracite mining. One of the two field trips was a visit to the quarry and rotary kiln lime plant of the Millard Lime & Stone Company at Annville, a few miles away.

The technical sessions were in charge of two co-chairmen: Sandford S. Cole (left) and Thomas L. Kesler (right).

The meeting was opened on November 8 with a welcoming luncheon at which A. F. Patterson, vice-president of the Mining Division of the Bethlehem Steel Company spoke on *A Look at the Prospects of the Mining Engineer.* At the Mining Branch luncheon the speaker was Grover J. Holt, president-elect of A.I.M.E. His subject was *Iron Ore — Past, Present and Future.* There was ample entertainment for the ladies, a dinner dance, and a golf tournament for the men.

In *Modern Grinding Plant Design in the Cement Industry,* W. R. Bendy, cement engineer, gave a complete and authoritative discussion of this subject. The grinding of materials is a large and costly part of the process of manufacturing portland cement and must be done at two separate points in the process —the preparation of raw materials for the rotary kiln, and the grinding of the resulting clinker into finished cement. According to Mr. Bendy, the most favored method of grinding in the cement industry has always been by the impact and attrition of a charge of steel balls cascading in a rotating mill. His talk was illustrated with numerous diagrams and charts.

Clinker grinding was first discussed and Mr. Bendy traced the trends in grinding methods over the years. The earliest grinding plants employed two-stage, open circuit grinding with short, large-diameter ball mills followed by tube mills of smaller diameter and greater length. Another early development was the compartment mill with two, three, or four compartments. These and other open circuit mills always encountered the problem of tramp oversize. Screens after the first compartment partially solved the problem, according to Mr. Bendy, until higher cement finenesses were called for.

The use of an air separator in closed circuit solved this problem. The next advance was the use of a dust collector in the circuit for cool-

ing the separator tailings which are being returned to the mill as well as the finished cement. The theoretical advantage of closed-circuit grinding, said Mr. Bendy, is that fine particles are removed before power is wasted in overgrinding them. With the separator good results can be obtained by using either a multi-compartment or a single-compartment mill.

According to the speaker, the lowest capital investment for a cement plant of a given size can be attained by using the fewest number of the largest units readily available. Various arrangements were described, with a listing of the equipment required for a complete clinker grinding department with a 1,500-hp. mill.

In discussing raw material grinding Mr. Bendy described the somewhat different requirements. The older system was to pre-dry the raw materials in rotary dryers before grinding, while the modern system is to flash dry in the separator. Both the original feed and the mill product are fed to the air separator, through which a large volume of preheated air is drawn and exhausted to a bag-type dust collector.

Dry raw material grinding, said Mr. Bendy, has undergone the same changes as clinker grinding in developing from two-stage open circuit to single-stage, closed circuit. However, the single compartment mill is usually employed. The chief difference between dry and raw grinding is that a hot air furnace must be provided for heating the air supplied to the air separator.

Mr. Bendy pointed out that wet raw material grinding has gone through the same stages of development as dry raw grinding and clinker grinding. Open circuit was first used and then screens in a closed circuit. A development of 1930 was the thin-slurry, full closed circuit, with the first compartment closed-circuited with rake classifiers and the second with rake-bowl classifiers. Variations of this system which was later developed, he said, gave phenomenal increases in efficiency over open circuit grinding. Thickeners are used to reduce the thin slurry moisture to normal kiln feed moisture. In closing, Mr. Bendy described a modern layout for both raw and clinker grinding in one building for labor saving reasons.

The deRoll vertical cement kiln, a post World War development of L. deRoll, Zurich, Switzerland, was described by H. Herbert Hughes,

Grover J. Holt, president-elect of A.I.M.E., who spoke on the topic of iron ore.

vice-president of the Porter International Company, Washington, D. C. The deRoll firm and its associated companies manufactures and installs equipment for a wide variety of industries. Vertical shaft kilns, he said, are as old as portland cement, and their fuel economy has long been recognized; but they have had the disadvantage of lack of consistent clinker quality, small capacity, and high labor costs.

In designing this kiln the deRoll engineers aimed to overcome these handicaps and in 1950 offered their vertical-kiln cement plants to the industry. Now, accordingto Mr. Hughes, there are 30 kilns in operation and ten more in various stages of construction, most of them in

W. R. Bendy, who discussed grinding plant design in the cement industry.

Europe and Africa. A 4-kiln plant, he said, is to be built in the British West Indies. No plant has yet been installed where standard A.S.T.M. cement must be produced, but deRoll is certain that this can be done.

The deRoll vertical kiln is built in two standard sizes: the 75-ton, with a diameter of 6 ft. and an output of 75 to 85 metric tons of clinker in 24 hours; and the 150-ton kiln, with a diameter of 8 ft. and a capacity of 150 to 170 tons. As the larger unit is the most popular, Mr. Hughes confined his comments to it. Plant design, he said, customarily provides for the installation of two 150-ton kilns, and such a 300-ton plant (600,000 bbl. per year) may be considered a standard installation.

In describing the plant Mr. Hughes pointed out that the quarrying, raw meal preparation, and cement finishing operations are about the same as in any cement plant. Chemical composition of the raw meal is the same, and the fineness should lie between 10 and 15 percent retained on 170-mesh. With solid fuel, heat requirements normally are slightly less than 1800 B.t.u.'s per lb. of clinker or about 650,000 B.t.u.'s per 376-lb. bbl. This requires about 58 lb. of anthracite buckwheat No. 4 or No. 5 per bbl. Coke can also be used, as Mr. Hughes emphasizes that the fuel must contain as small a proportion of volatile consituents as possible. The minimum usable is a 9,900 B.t.u. coke having 22 percent ash and 10 per cent water content. Two new developments, he said, are the successful use of petroleum coke on a commercial scale, and the imminent introduction by deRoll of an oil- or gas-fired shaft kiln.

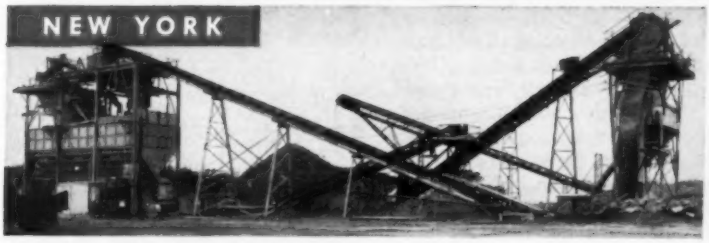
The full details of techniques relating to manufacture and operation of important features of the kiln are not given out by deRoll, but Mr. Hughes presented the following brief description of the kiln and its operation—tied in with a cut-away scale model. (See illustration.)

(a) Raw meal and fuel are charged in exact proportions by weighing machines;

(b) Helical mixer blends the raw meal and fuel into a charge of uniform constituency;

(c) Charge passes to a nodulizing disc where, with the addition of about 12 to 14 percent water, the charge is formed into nodules, mostly ranging in diameter from about ⅜ to ¾ in., and the few larger nodules that may form are not detrimental;

modern AGGREGATE PLANTS by TELSMITH



Relieve yourself of all technical details. Get a complete, flexible aggregate plant designed for high capacity and low-cost production, planned and equipped by a single skilled organization — Telsmith.

MP-17

Send for Bulletin No. 278

SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Songworks, Milwaukee

H. Herbert Hughes described a vertical cement kiln developed in Switzerland.

(d) Adjustable rotary hopper properly charges the nodules into the kiln, maintaining a uniform charge over the entire diameter of the kiln;

(e) Nodules pass down through the kiln proper. Observations on kilns in use show that most of the nodules keep their shape until actual discharge from the kiln. This means retention of uniform permeability of the charge and consequently also uniform gas distribution over the whole section of the kiln, with the clinkering zone remaining constantly at the same general level.

(f) Rotary grate breaks up caked clinker. Although the nodules generally keep their shape, they tend to fuse into irregular clinker masses that are broken up by the rotary grate. Speed of the rotary grate can be varied, thus regulating the quantity of clinker extracted and by so doing controlling the burning process.

(g) Discharge chute comprises three discharge gates fitted with airlocks to prevent escape of combustion air; thus continuous discharge of clinker has no effect on burning conditions;

(h) Clinker is dropped on shaker conveyor;

(i) Simple jaw crusher reduces caked clinker to maximum 1¼ in., ready for finishing department;

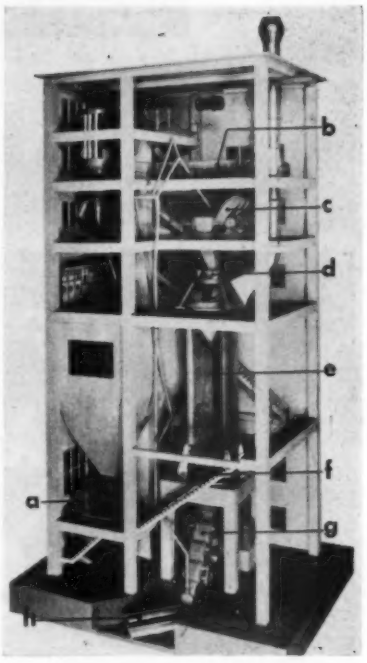
(j) Blower forces combustion air through rotary grate in adequate volume to maintain proper conditions in burning zone. The introduction of such air at the bottom of the kiln serves also to cool the clinker between the burning zone and the discharge gates.

Details were also given on some of the equipment and some phases of the operation. The kiln is a vertical cylinder of steel plate, about 33 ft. high and having a 9-ft. 4-in. inside diameter. Lined with refractories, its inside diameter is about 8 ft. Except for the grate at the bottom, there are no parts of any kind, moving or stationary, throughout its entire height. Over the top of the kiln is a sheet metal hood in which the charging chute rotates and from which the stack gases are drawn. Average temperature at the top of the kiln is around 212 deg. F. The top 5 ft. of the kiln is the drying and calcining zone; below this, a 10-ft. section is the clinkering or burning zone, where the temperature is about 2632 deg. F.; the bottom 18 ft. of the kiln is the cooling zone, with a discharge temperature of about 482 deg. F.

A rotary grate with a variable-speed drive is used for continuous discharge of clinker. Special 3-compartment discharge gates prevent loss of combustion air from the kiln as the clinker is discharged. Each kiln requires a blower of about 5,000 c.f.m. capacity and a multiple-panel switchboard with controls and recorders for all operations. Electrical consumption for the entire kiln department, according to Mr. Hughes, is 2 to 2.4 kw.-h. per bbl. In European practice the minimum of two men per shift is required for an installation of one or two kilns. Direct labor requirements average 0.04 man-hours per bbl. of cement.

In a paper entitled *Production of Lightweight Aggregate From Slaty Rocks in North Carolina* Richard J. Counsill, industrial geologist, the Atlantic Coast Line Railroad Company, described the operations of the Southern Lightweight Aggregate Corporation at Aquadale, N. C. This operation, which began late in 1953 with two rotary kilns, has since been expanded into a 4-kiln operation. The deposit was selected after several years of field investigation and is a tuffaceous argillite with a grain size which, measured petrographically, ranges from very fine sand to clay, with silt and clay size material predominating. Mineralogically, the rocks are a microcrystalline aggregate composed principally of feldspar, quartz, and sericite, with minor amounts of chlorite, biotite, etc.

After giving a thorough description of the exploration and geology Mr. Counsill also outlined the development and operation of the



A cut-away scale model of a vertical cement kiln.

open quarry and the processing in the plant. An interesting feature is that the four rotary kilns are lined with a lightweight aggregate concrete which is poured in place except for a 25-ft. section in the high-temperature zone, where basic refractories are used. The maximum temperature in the kilns is about 2,300 deg. F. The finished lightweight aggregate, said Mr. Counsill, is a highly cellular, incipiently vitrified product weighing from 50 to 60 lb. per cu. ft., depending on size. The capacity of the plant is over 100 cars per week.

The Prepakt method of placing concrete was described by J. C. King of the Intrusion Prepakt Company. This method, he said, has an excellent application in the mining field for controlling mine water. It has been used to depths of 3,000 to 5,000 ft. in the gold mines of South Africa. A recent job he described was the construction of a new graving dock in Camden, N. J., where 120,000 cu. yd. of concrete was placed under water by this method. In this system the aggregate is placed first and then a mortar of sand, cement, water, and an additive is pumped in. This additive makes the mortar fluid, with a 0.45 water-cementing materials ratio; it also delays stiffening to 6 to 8 hours. According to Mr. King, the use of this method practically eliminates shrink-

(Continued on page 97)

44th NATIONAL SAFETY CONGRESS PROVIDES OUTSTANDING PROGRAM

200 sessions held by industry groups

Another ON THE SPOT Report

FOR five heavily-scheduled days from October 22 to 26, the National Safety Council held its 44th National Safety Congress and Exposition — the nation's only safety-convention — in Chicago. Providing a clearinghouse of information and progress on all phases of accident prevention, the congress presented 200 scheduled meetings and sessions, as well as more than 200 exhibits at the exposition held in the headquarters hotel, the Conrad Hilton. Approximately 12,000 persons attended the sessions and the show.

While emphasis was placed on the study and prevention of traffic deaths — particularly pertinent in the light of the current highway program — all fields of safety were covered, including industrial, farm, home, school, and public safety.

More than 800 speakers and panel participants were involved in presenting the papers and discussions for the various groups. The latter included industrial safety engineers; federal, state, and local officials; community safety council representatives; insurance executives; plant supervisors and superintendents; and members of the medical profession.

Preceding the first of two afternoon sessions of the Cement and Quarry Section on October 23, a joint luncheon was held with the Coal Mining and Mining Sections. Presiding at this gathering was J. T. Ryan Jr., president, Mine Safety Appliances Company, Pittsburgh, Pa. In an after-luncheon speech, *Training Is Communications,* presented by William Onchen Jr., director, management development, personnel department, New York Central System, pertinent points on employer-employee relationships were couched in a humorous vein. Drawing an analogy to a military situation, Mr. Onchen pointed out that while a chain of command may be present, this does not necessarily indicate a chain of understanding. Without the latter, which depends on "communications" from top to bottom, it was pointed out, the chain of command is ineffectual and nothing will be accomplished in the individual lines of endeavor.

Preceding the luncheon address, Mr. Ryan introduced section officers, including the following in the Cement and Quarry group: Howard Riefenstahl, Alpha Portland Cement Company, Easton, Pa., general chairman; Seymour B. Fleming, New York Trap Rock Corporation, Newburgh, N.Y., and Paul Worseck, Lehigh Portland Cement Company, Allentown, Pa., first and second vice-chairman; and Walter A. Dearth, General Crushed Stone Company, Easton, Pa., secretary.

As the initial order of business during the Cement and Quarry Section meeting following the luncheon, officers for the 1956-57 term were elected. All of the preceding year's officers, listed above, were unanimously returned to their respective posts. William A. Kipp, Universal Atlas Cement Company, New York, N.Y., was also called upon to retain the program chairmanship.

The election was followed by the session's first speaker, Kenneth H. Morse, chief industrial hygiene engineer, U.S. Steel Corporation, Pittsburgh, Pa. Mr. Morse discussed the subject of *Health Hazards from Maintenance Solvents.* It was noted that such hazards have three general aspects—that of danger from inhalation, to the skin, and from fire.

Ned H. Dearborn, president, National Safety Council, opening the organization's 44th congress.

Mr. Morse took particular note of the use of the term "safe" in advertisements of many solvents. Objection to this practice, it was stated, is based on the premise that there are no safe solvents, in the full meaning of the term, but only relatively safe ones. It was suggested that such a description implies a safety that is not actually inherent, and that this fact can lead to casual, and potentially dangerous use of the material.

In the matter of employing industrial solvents, the speaker noted that the possible intermittent nature of solvent operations in various plants should not be controlling on safety precautions. In leading up to a discussion of the various hazards involved, Mr. Morse pointed out that different solvents affect different parts of the body, and that safety measures must therefore be all-inclusive.

With respect to establishing concentration limits as a safety precaution against toxicity, the speaker stated that these have generally been based on exposures occurring under average working conditions, and that they should be broadened to take into consideration unusual operations that may take place. Further, it was noted, some solvents, while having a relatively low toxic limit, may have a higher evaporation rate. The limits should also be considered in the light of vapor pressures and densities, as well as concentration.

Listed among the dangerous results of inhalation of an excessive concentration were narcotic and anaesthetic effects, toxic effects on particular parts of the body, and even possible death. Dermatitis was also pointed out as a common result, and it was stated that such cases have not proven easy to evaluate for compensation laws.

Fire hazards that must be considered as accompanying the use of solvents include flash point, autoignition, and explosive range. With respect to the first, it was said that the flash point should be at least 20 degrees above the highest use temperature, and generally none should be under 100 deg. F. Caution was

Left: Louis B. Seltzer, nationally-known editor of the Cleveland Press, addressed the gathering at the annual banquet.

Right: David L. Arm, left, director of industrial safety for the council, presenting to Ivan F. LeGore, Portland Cement Association, one of the plaques awarded to 13 associations.

advised in establishing specifications for mixing of chlorinated and petroleum solvents, in view of the above hazards.

Specific safety precautions suggested by Mr. Morse included the following: (1) use solvents only in large, well ventilated areas; (2) eliminate open transport; (3) establish good operating practices; (4) obtain specific data on materials used from the manufacturer or supplier; (5) set up a list of approved solvents for each particular use; and (6) avoid overuse.

The subject of industrial illumination was discussed by B. F. Avery, district engineer, General Electric Company, Chicago, under the heading of *Lighting Your Way to Safety.* Several types of lighting units were exhibited, after which a number of slides were shown depicting before-and-after effects of illumination revisions in a number of plants.

Noting that anything that aids the worker will automatically be accompanied by greater safety and an increase in production efficiency, Mr. Avery pointed out that one of the top aids is proper lighting. Sources noted were incandescent, fluorescent, and mercury. An interesting comparison of light requirements was brought out in the statement that while 1 foot-candle will suffice in reading ordinary magazine type, at least 70 foot-candles are needed in tool- and die-making operations.

Comments accompanying the showing of slides brought out the fact that accident frequency rates have dropped as much as 16 percent, and production efficiency has increased up to 35 percent through improvement in plant illumination accomplished with both modern lighting equipment and harmonious paint schemes. Depending on the operation involved, the speaker noted that illumination required by modern ranges from at least 40 to 100 foot-candles per square foot.

Accident Analysis and Its Benefits was broken down into two categories and discussed during the Wednesday session in papers prepared by Paul Worseck, Lehigh Portland Cement Company, Allentown Pa., and Dr. J. R. D. Brown, accident prevention bureau, Portland Cement Association, Chicago. The two categories, respectively, were *Lessons Learned from Fatalities* and *Lessons Learned from Minor Injury Accidents* — both in the cement and quarry industries.

In Mr. Worseck's paper it was pointed out that with an average of about one fatality occuring every 15 hours, 14,200 men were killed in industrial accidents during 1955 — a figure that won't allow complacency and points up the need for constant attention to, and emphasis upon, safety procedures.

Several case histories of fatal accidents were presented, along with slides depicting the various situations involved. Significantly, these cases illustrated the fact that while there were instances of insufficient guarding and precaution measures, the fatalities were predominently the result of improper and careless procedures on the part of the men killed.

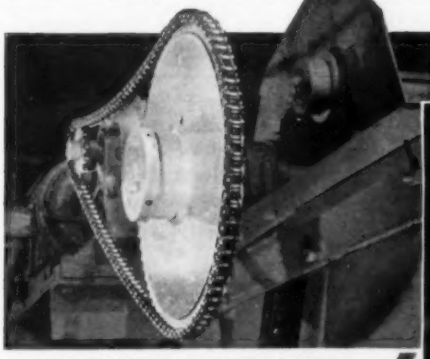
At one plant, a structural revision was being undertaken by carpenters at the same time that a separate group was planning conveyor inspection and repair. Due to the fact that the carpenters failed to lock out the belt drive circuit, the conveyor was inadvertently started by the inspection crew, with fatal results to one of the carpenters working adjacent to the head pulley.

The accident underlined the inherent danger in simultaneous inspection and construction operations. In addition, the company is now installing an expanded controlling and lockout system that will make repetition of this accident impossible.

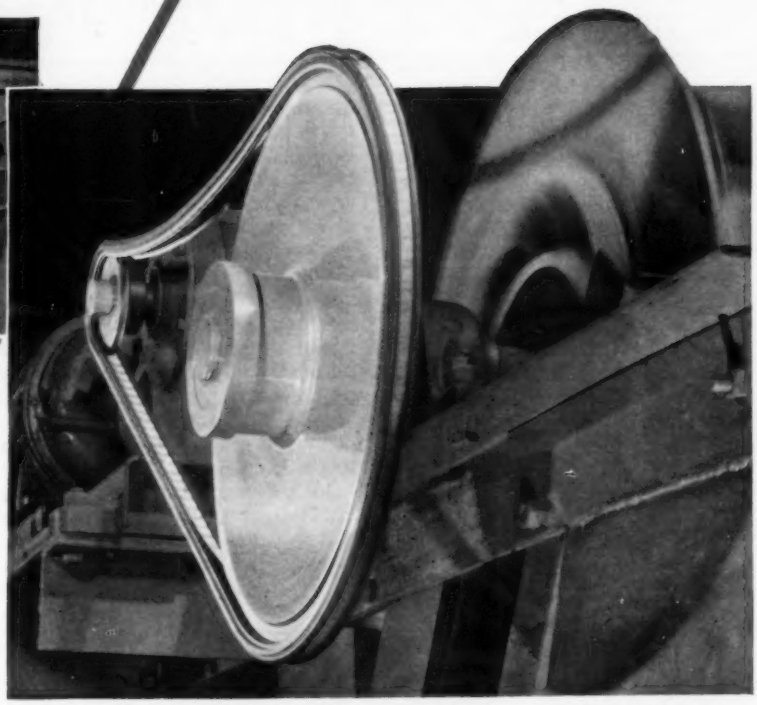
In two more cases involving fatalities related to conveyors, both deaths resulted from careless procedure. Sitting on a conveyor frame near the tail pulley while the belt was run-

Among the speakers in the Cement and Quarry sessions were H. F. Johnston, safety director, The Funkhouser Co., Hagerstown, Md.; Dr. J. R. D. Brown, assistant manager, accident prevention bureau, Portland Cement Association, Chicago; and F. F. Storch, Whitehall Cement Manufacturing Co., Philadelphia, Pa.

It's not just static strength...



RESISTANCE TO TENSILE STRESS is achieved by use of properly heat-treated, accurately-machined side bars made of premium steel and fitted with properly-hardened pins, bushings and rollers. But to resist *operational* stresses, additional controls over dimensional accuracy, uniformity and roller resiliency are essential.



STRENGTH OF CHAIN IN MOTION is accomplished through tensile strength *plus* special Link-Belt refinements. These include pitch-hole preparation, micro-finish of parts, special processing of sidebars, prelubrication and rigid quality control from initial selection of materials to final protective boxing.

it's *dynamic strength*

in LINK-BELT Roller Chain that fights fatigue

ON high-speed drives or heavy conveying jobs, the components of every pitch of roller chain face severe and repeated operating stresses—engagement with sprockets, shock of starting loads, centrifugal loads and others. That's why *dynamic strength*—ability of chain to resist these stresses—is so important. And it's built into *every length* of Link-Belt Precision Steel Roller Chain.

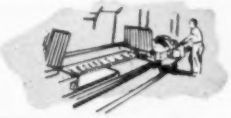
How is dynamic strength developed? In addition to Link-Belt "extras" . . . special design, manufacturing and processing steps provide required properties of uniformity and accuracy for long-life operation.

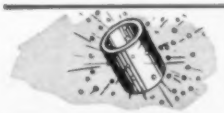
Talk over your roller chain needs at your nearby Link-Belt office or authorized stock-carrying distributor. Ask for Book 2457, covering this complete line of single and multiple widths, in ¼ to 3-inch standard pitch, 1 to 3-inch double pitch.

14,122

LINK-BELT gives you dynamic strength that comes from these important EXTRAS

PRE-STRESSING of multiple width chain provides uniform load distribution.





SHOT-PEENED ROLLERS have greater fatigue life, added ability to withstand impact.

CLOSER HEAT-TREAT CONTROL —coupled with rigid testing insures uniformity.

LOCK-TYPE BUSHINGS (applied on a range of sizes) end a cause of stiff chain.

LINK-BELT

ROLLER CHAINS & SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

Cement		Limestone		Lime		Marble		Granite		Traprock		Slate		Sandstone		Totals	
Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
160	5,856	225	18,366	70	7,603	10	1,806	54	5,462	26	2,497	13	1,979	28	3,507	586	47,076

A compilation of the number of injuries in the quarry industries by type of stone quarried over a 10 year period since 1945.

ning cost one man his life, while the other casualty came as a result of attempting to clean the lower surface of a moving belt.

Spotting a loading shovel too close to the bank during routine oiling resulted in death for an oiler when he was struck by rock falling from the highwall. This occurred despite the fact that the shovel had been moved from the active face which was being prepared for blasting.

A report on a fatality involving a haulage unit indicates that a particular type of equipment not designed for on-the-road movement was moved from one pit location to another on a public highway. A situation arose which forced the operator to take to the shoulder, where a hidden obstruction was struck, overturning the haulage unit. Thrown from his open, unprotected seat, the driver was crushed by the machine.

An unguarded under-track unloading bin resulted in a fatality when a plant foreman, whose vision was apparently obscured by smoke in the area, fell in and was rendered unconscious. In this condition, he lay face down in fine material at the bottom and was suffocated. Subsequently, a grating was installed over the bin.

In the face of these and other fatalities, the paper pointed out that accident prevention programs have not yet reached desired levels. It was suggested that the answer lies in both enforcement and engineering of safe conditions *before* accidents—not later.

Dr. Brown, in following the above with a discussion of non-fatal accidents, noted that interest in minor injuries is growing on the basis that study of these mishaps can lead to the prevention of fatal accidents. Stating that the association of which he is an official is endeavoring to achieve greater response in reporting non-disabling injuries, the speaker commented that in 1955 about 40 percent of the plants submitting reports indicated no lost-time or disabling accidents and no fatalities.

Noting that this relatively high figure could lead to complacency, Dr. Brown indicated that disabling and non-disabling accidents are found to be frequently due to the same or similar causes. Further, it was pointed out, many plants with the above good safety records have a high frequency of non-disabling accidents. Therefore, the development of a simple report for this type of injury is being undertaken. Such data, Dr. Brown said, would allow a study of minor injuries, and such an investigation may show up faulty procedures and potential sources of serious trouble.

It was suggested that prompt first-aid has probably frequently prevented a non-disabling injury from developing into a lost-time condition; therefore, there should be strong insistence upon reporting *all* minor injuries to first-aid stations.

The study to date on non-disabling accidents has indicated that causes fall into the following four general categories: moving machinery, electrical, high places, and haulage. It was emphasized that for the greatest benefit, interpretation of data as disseminated must be followed with constructive action. An interesting point was illustrated by charts that showed the annual peak occurrence of non-disabling injuries to be in June, while for disabling accidents, two peaks were evident—one in March, followed by another in July.

Safety Ideas Illustrated, a presentation of slides covering safety devices and ideas that have prevented and controlled accident occurrence, or which can do so, concluded the Cement and Quarry section's final

Merrill Pollard, representing the Gypsum Association, receives the N.S.C. plaque awarded his group and 12 other industry organizations for outstanding safety programs and activities.

N.S.C. staff representative G. G. Grieve, left, with three Cement and Quarry Section officers: Seymour B. Fleming, New York Trap Rock Corp., Newburgh, N.Y., 1st vice-chairman; Howard Riefenstahl, Alpha Portland Cement Co., Easton, Pa., general chairman; and Walter A. Dearth, General Crushed Stone Co., Easton, Pa., secretary.

session. H. F. Johnston, safety director, The Funkhouser Company, Hagerstown, Md., presided over this part of the program, which has proven to be an enthusiastically received feature since its inception three years ago.

Almost without exception the ideas and installations illustrated in the slides instigated an exchange of pro and con discussions from the floor. Among the points presented were conveyor belt protection, various guard rail installations, respirators, manlifts, revisions to rail car couplings that allow men to couple and uncouple without stepping between cars, asbestos hoods that afford considerable protection from molten metal in welding or flying metal in cutting, working platforms that facilitate movement of men involved in repair of ball and other types of mills, and wrapping guard rails in proximity to kilns with asbestos.

Among the 113 industry groups honored by the National Safety Council with awards for safety activities were the Gypsum Association and the Portland Cement Association. Factors considered in making the awards were progress in accident prevention, as well as excellence and balance of safety programs. David L. Arm, director of industrial safety for the Council presented the plaques. The associations involved in the 1956 contest represented 20,000 firms with a total of 2,000,000 workers.

One of the highlights of the Congress was the annual banquet held on Wednesday evening. Nearly 2,000 people were present to hear Louis B. Seltzer, nationally-known editor of the *Cleveland Press*. Mr. Seltzer has long been an advocate of social measures that will alleviate the human distress attributable to preventable accidents.

A.I.M.E. Meeting

(*From page* 92)

age of the concrete.

The new Hardinge disc roll mill was described in a paper by R. J. Russell and E. M. Zuercher of the Hardinge Company, Inc. This mill, an adaptation of the Loesche mill, is a roller-type grinding mill well established in Europe but only recently introduced into this country. The grinding elements of the mill are a horizontal disc or table and two bevelled rollers positioned over this table. In operation the table is the grinding element to which power is applied. Material is fed onto the rotating table and ground as it passes under the rollers, which are subjected to controlled pressure. Ground material is thrown over the rim of the table and is lifted by an air stream, the larger particles being deflected back to the center of the table. The fines are carried upward to a classifier which produces the desired fines, and the oversize is returned by gravity to the mill. Heated air can be used in the mill where drying is required.

According to the authors, the field of application for the disc roll mill is broad but does not at present include extremely hard and abrasive materials due to abrasion. Performance data was presented for several European installations. Power per unit of surface produced is low. One large unit in Europe is delivering 42 tons per hour of cement raw mix at 85 percent passing 200-mesh, for a total power consumption of 13-hp. hours per ton. Applications have been confined to dry grinding with an air classifying system, but the adaptation and use of this mill for preliminary grinding and in the area of coarse and granular products is under development. Also projected for the future is the application to wet grinding.

Another paper of interest to producers of nonmetallic minerals was entitled *Industrial Minerals in Pennsylvania,* by Dr. Carlyle Gray, Pennsylvania State Geological Survey. *The Development and Application of Liquid Cyclones to Closed Circuit Grinding* was described by D. D. Melin, Dorr Oliver, Inc. Other excellent papers presented dealt specifically with metal and coal mining processing.

National Lime Assn. Cites 1955 Safety Contest Winners

The U.S. Bureau of Mines determined that 11 of 40 lime plants enrolled in the 1955 Safety Contest, sponsored by the National Lime Association, were operated during the year without a lost-time or disabling injury to their employees. In recognition of outstanding safety records at these injury-free plants, each received the N.L.A. Certificate of Achievement in Safety.

Award-winning plants, which were operated a total of 1,731,730 man-hours, or 18 percent of the aggregate working time of all participating operations, were as follows:

Group A1—Quarries with calcining plants working with 100,000 or more man-hours—

Genoa plant, United States Gypsum Company, Genoa, Ohio, 547,282 man-hours.

New Braunfels plant, United States Gypsum Company, New Braunfels, Texas, 265,699 man-hours.

Natividad plant, Kaiser Aluminum and Chemical Company, Natividad, Calif., 239,600 man-hours.

Farnams plant, United States Gypsum Company, Cheshire, Mass., 138,168 man-hours.

Millville plant, Blair Limestone Division, Jones and Laughlin Steel Corporation, Harpers Ferry, W.Va., 122,317 man-hours.

Group A2—Quarries with calcining plants working less than 100,000 man-hours—

Diamond Springs plant, Diamond Springs Lime Company, Diamond Springs, Calif., 96,960 man-hours.

Grantsville dolomite plant, Utah Lime and Stone Company, Grantsville, Utah, 68,640 man-hours.

Manitowoc plant, Rockwell Lime Company, Manitowoc, Wis., 49,867 man-hours.

This annual safety competition, sponsored by The National Lime Association and conducted by the U.S. Bureau of Mines is open to any plant that produces quick or hydrated lime or dead-burned dolomite, all or a portion of which is sold commercially. Enrollment applications may be obtained from The Branch of Accident Analysis, Division of Safety, Bureau of Mines, Washington 25, D.C.

Whitehall Cement Employees Receive 3rd Safety Award

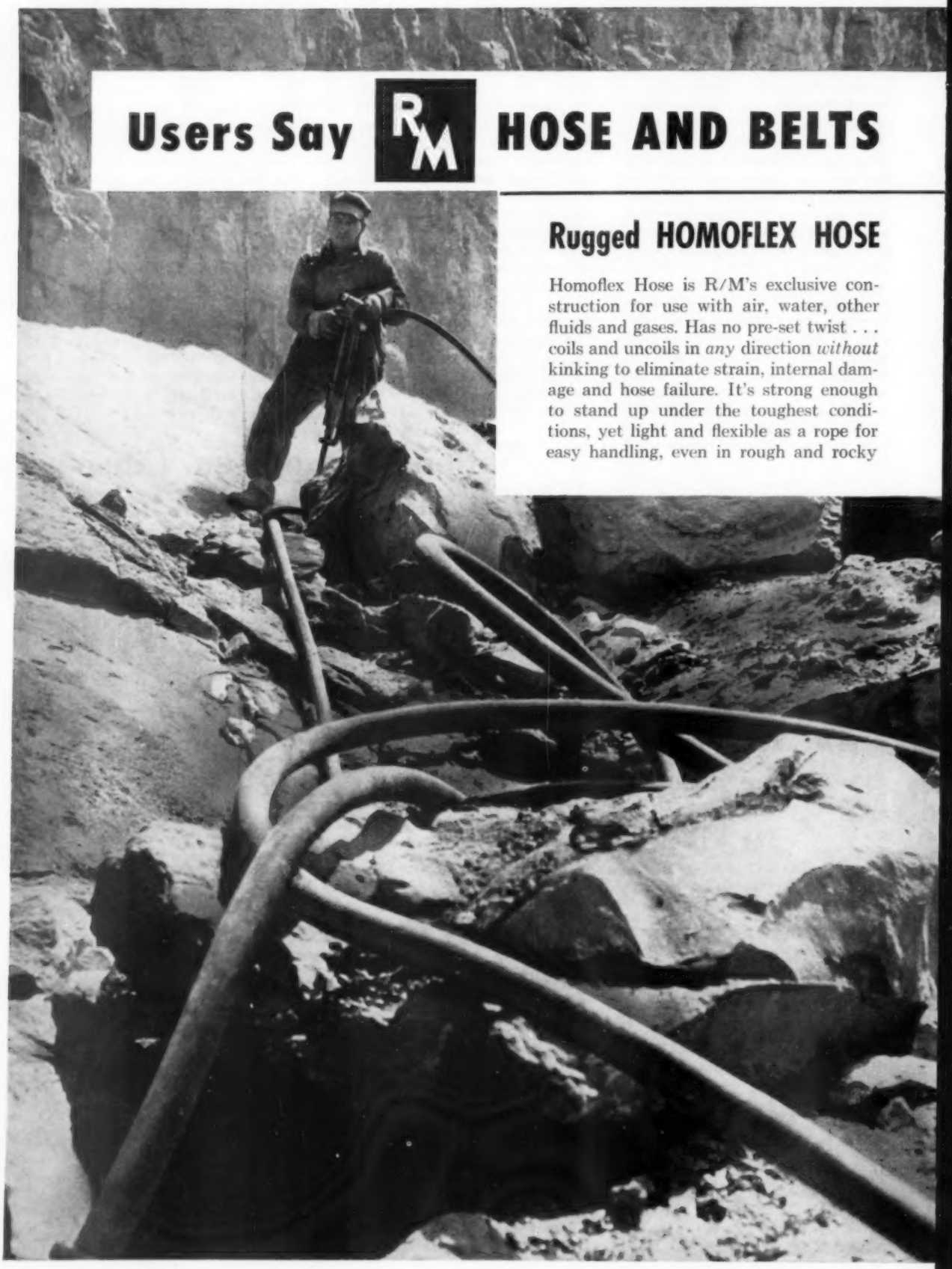
Employes of the Whitehall Cement Manufacturing Company, Cementon, Pa., have been awarded a plaque for their 33-month safety record. The presentation was made by the Pennsylvania Manufacturers' Association.

The cement company has a record of 1,647,598 man-hours of production without a disabling injury between February 15, 1955, and October 31, 1956.

The plaque is the highest safety honor given a member firm by the association. It will be added to two others recently presented to Whitehall employees — the 1,000-Day Award and the National Safety Council Award for 1955.

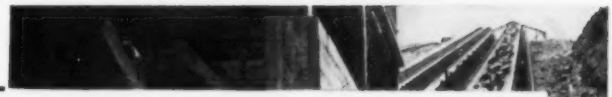
The Riesenberg Gravel Company, Clarksville, Dela., has been purchased by W. A. Roberts, A. R. Armbrust, and O. L. Ohnstad. Mr. Roberts is president, Mr. Armbrust is vice-president, and Mr. Ohnstad will serve as secretary-treasurer.

Users Say R/M HOSE AND BELTS



Rugged HOMOFLEX HOSE

Homoflex Hose is R/M's exclusive construction for use with air, water, other fluids and gases. Has no pre-set twist . . . coils and uncoils in *any* direction *without* kinking to eliminate strain, internal damage and hose failure. It's strong enough to stand up under the toughest conditions, yet light and flexible as a rope for easy handling, even in rough and rocky



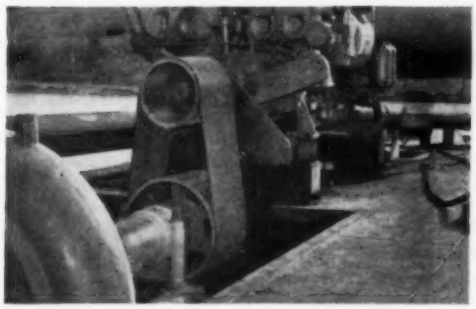
Give You "More Use per Dollar"

. . . is "Flexible as a Rope"!

conditions. Cover, strength member and tube are virtually inseparable. Uniform inside and outside diameters make Homoflex easier to couple, too.

You get "More Use per Dollar" *two* ways . . . Easier handling helps workers to get more work done . . . Hose lasts longer.

Write for Bulletin #6879



Eliminate Belt Matching Problems with R/M POLY-V® DRIVE!

R/M's patented Poly-V Drive employs a *single, endless* V-ribbed belt — eliminating common V-belt matching problems. This new drive delivers up to 50% more horsepower capacity than an ordinary multiple V-drive. Just two cross-sections handle all drive requirements. Lower inventory of belts and sheaves — less maintenance. You get "More Use per Dollar."

Write for Bulletin #6638

For the "Smoothest Running V-Belts Made" Specify CONDOR or R/M SUPER-POWER V-BELTS

*Poly-V is a registered Raybestos-Manhattan Trademark.

RAY-MAN CONVEYOR BELTS Haul Heavier Loads at Lower Cost

This heavy duty conveyor belt has the easy troughability and wear resistance to handle fuller, heavier loads. Cushioned strength members give resilience to the impact of shock loading . . . and flexibility to train naturally. Balanced double compensation construction relieves outer ply stress, prolongs belt life. Ray-Man Conveyor Belt resists gouging and ripping . . . holds fasteners much better than other types of belts . . . requires no breaker fabric. Like all Raybestos-Manhattan heavy duty belts, Ray-Man is moisture resistant and mildew-proof . . . and features the exclusive "XDC" Cover which greatly increases protection against wear, tear, cuts and abrasion . . . You get longer, trouble-free service . . . "More Use per Dollar."

Check also R/M's extra-cushioned Homocord belt for unusually abusive shock loading . . . and R/M Tension-Master for extra long lifts, high tensions.

Write for Bulletin #6915

RM 702

BELTS • HOSE • ROLL COVERING • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

3600-Ton-per-Day Plant Of Lakeside Stone Co.

serves southeastern area— one of south carolina's largest aggregate producers

Another ON THE SPOT Report

THE recent organization of Lakeside Stone Company as a joint venture by two Lenoir, N.C., firms—Clement Bros. and Material Sales — for the operation of a new 3,600 t.p.d. commercial crushed stone plant at Greenville, S.C., has provided the latter state with one of its largest aggregate producing facilities.

By **BUREN C. HEROD**

Led to the decision to establish a commercial quarry by growing contracting needs in this expanding industrial area of the southeast, the Clement Bros. organization, itself a contracting firm, after carrying out an extensive core drilling program, leased a 158-acre tract underlain by granite about 7 miles southwest of Greenville. The core drilling program had established that there was at least 200 ft. of granite available throughout the property for crushing operations. Shortly after the acquisition of the tract, erection of the plant, which was designed by Clement personnel, was started in November, 1955, and operations were initiated in January, 1956.

Highly flexible, particularly with respect to its finish material handling, the plant produces a wide range of aggregate sizes, has provision for drawing material at a number of points, can supply any desired blend of finished products, and has multiple means of loading these products. The apparently growing use of finer sizes of aggregate in the Southeast is reflected in Lakeside's installation of three cone crushers, following the primary reduction unit, that provide two secondary crushing stages.

An overall view of Lakeside Stone's plant area. The primary crusher run surge pile is in foreground. Stockpiling conveyors are visible in the left background.

Since the property is located on a slope in a foothill area, the quarry was opened on the lower side and the plant site established near the boundary on the high side. In effect, the floor level established by initial operations will be kept as advance is made into greater thickness of the granite. While the haulage grade is relatively steep, any possible disadvantage is offset by operating two loading shovels on separate faces in the quarry.

In the quarry a pair of Gardner-Denver Air Trac primary blast hole drills, each supplied independently by a 600 Ingersoll-Rand Gyroflow air compressor, are using 3½ in. Brunner & Lay Rok-Bits in drilling. The blast holes are put down in a 10- by 10-ft. pattern and are charged with 3-in. DuPont 40 percent special gel dynamite. Secondary breakage, if necessary, is accomplished with a dropball suspended from a Northwest 25 Utility crane. Loading and haulage of the broken rock is handled by a 2½ cu. yd. Northwest 80D shovel and a 1½-cu. yd. Koehring 605, along with four 15-ton Euclid end-dump trucks.

At the plant site the quarry run granite is dumped into a hopper from which it is transferred on a 42-in. by 14-ft. Cedarapids apron conveyor to the primary crusher. The latter, a 42- by 48-in. Lippmann jaw crusher, is driven by a 220-hp. Caterpillar Model 364 diesel motor.

Primary crusher product is received on a 36-in. Marco belt conveyor and transported to a discharge

A view of one of the two active quarry faces. Two shovels and four trucks are used for loading and haulage.

point over a crusher-run surge pile. Material placed on this pile has a top size of about 6 in. Below the surge pile a reclaiming tunnel constructed of 8-ft. dia. Armco tunnel liner houses a Syntron feeder that transfers the crusher-run material onto another 36-in. belt on which it is conveyed to the first of two secondary crushing stages.

In this first stage the surge pile material is discharged to a 4¼-ft. Nordberg Symons Standard cone crusher driven by a 200-hp. G-E slip ring motor. The rock reduced through the 3-in. setting of this crusher is discharged on another 36-in. belt and transported to the next secondary crushing stage, where it is split through a pants leg chute to a pair of 5- by 14-ft. Lecco Vib horizontal screens. All screening units in the plant are of the same manufacture.

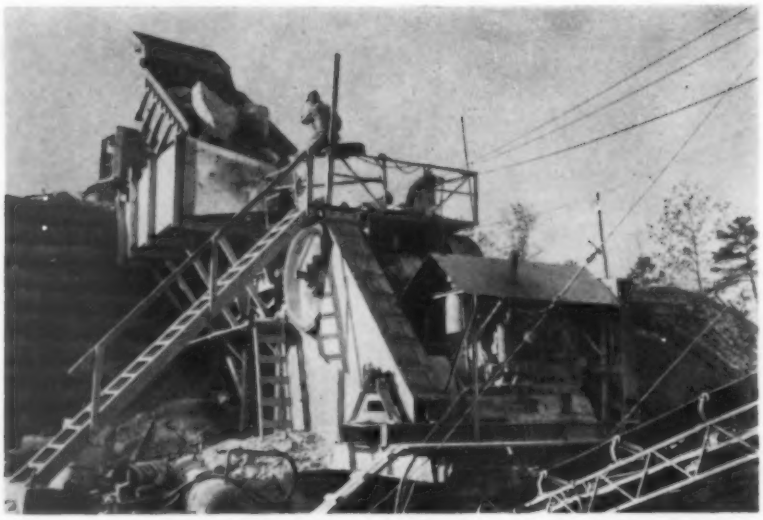
The single screening deck on each of these scalping units is divided into two sections—one with 1½-in. and the other with 2-in. openings. Each screen discharges its plus 2-in. retained material to the respective one of two 4-ft. Nordberg Symons Short Head cone crushers that are driven by 200-hp. G-E slip-ring motors. The minus 2-in. material from each screen is dropped to the underlying compartment of a two-compartment bin, from which it is loaded into trucks and transported to crusher run stockpile. This is the first of four points at which finished products may be drawn from the processing flow.

The Short Head crusher discharge from both units is received on a common conveyor and transferred to another belt on which it is returned to the scalping screens' feed belt in closed circuit. The other product of these screens (minus 1½-in. material) is discharged onto a 24-in. Barber-Greene conveyor to continue its flow through the balance of the plant processing.

On the latter conveyor, the 1½-in. to dust material is transported to a Lecco Vib screen that operates as a deduster. This 6- by 16-ft. unit is equipped with 1-, ¾-in., and No. 4 mesh screencloth on the top, middle, and bottom decks, respectively.

At this point the minus No. 4 material is separated from the flow

Blasthole drilling operations employ units of this type. A similar unit and individual compressors are seen in left background.



The primary crusher installation. Note the size of the material dumped and the protection afforded the V-belt drive of the crusher.

From the crusher-run surge pile (left) rock is fed to the first of the two secondary crushing stages.

The crusher which is visible and one directly behind it comprise the final secondary reduction stage. These units are fed individually from their respective scalpers above the bin.

and hauled by truck from a bin underlying the screen to a stockpile of fine aggregates used in block, asphalt, etc., while the other fractions, as dedusted material, continue the flow on a 30-in. Marco belt conveyor to a 5- by 16-ft. separating screen. This unit is equipped with a top deck of 1-in. openings, two middle deck sections of ¾-in. and 9/16-in., and a bottom deck which is actually a collecting pan.

The separating screen is mounted on a tower from which four Barber-Greene stockpiling conveyors, two on each of two sides, are suspended as boom conveyors. With one long and one shorter conveyor on each side, the two larger fractions (1½ by 1-in., and 1-in.) are discharged to the two outer stockpiles, while the smaller fractions (9/16-in. and ¾-in.) are discharged by the two shorter conveyors to the inner stockpiles. About 35,000 tons of materials are maintained in this area.

Below these piles a 280-ft. tunnel, constructed of 7-ft. Armco tunnel liner, houses a 24-in. by 300-ft. Barber-Greene reclaiming belt. Each of four draw points in the tunnel is equipped with a Syntron feeder, thus allowing for an individual draw of a particular size or a blending of two or more products. Materials fed to the reclaiming belt are transported to a 5- by 14-ft. double-deck screen equipped with ½-in. top and No. 4 mesh bottom deck screencloth.

Operated as a washing screen this unit is supplied with more than 200 g.p.m. of water by a Jaeger pump driven by a 25-hp. motor. The water is supplied through a 6-in. line. Material retained on both decks of the washing screen is chuted to a 30-in. Marco belt conveyor and raised to a pair of 6- by 16-ft. screens which are actually vibrating conveyors. These are mounted over five 125-ton capacity storage bins fabricated by the plant crew.

By means of a flop gate installed at the end of the conveyor, the entire product of the washing screen can be discharged as a washed blind directly into the first bin or allowed to pass to the first of the two vibrating conveyors that are mounted in series. The first of these units is fitted with a ⅜-in. screen, while the divided deck of the second unit is equipped with a 9/16-in. opening initial section and a ¾-in. following section. The ⅜-in., 9/16-, ¾- and 1-in. products thus separated are

dropped to the remaining four underlying bins.

Through gates on the bottom, or from chutes on the side, these bins can supply material either to trucks or to rail cars. In addition to this loading facility a truck ramp has also been constructed adjacent to the rail spur to provide for rail loading of crusher run, dust, and specific sizes by truck haulage from stockpile. Stockpiled materials are rehandled for direct loading into trucks by a 2½-cu. yd. Hough Payloader.

J. "Fred" Clement, one of five brothers active in the Clement organization, is superintendent of the Greenville operation.

At another site about 60 miles southwest of Greenville, the Clement firm is operating a non-commercial plant near Hartwell, Ga., from which it has supplied a substantial tonnage of the 6-in. riprap and smaller sizes required for the 17,900-ft. earth embankment Hartwell Dam.

To supply required materials under this contract, the firm installed a portable plant consisting of a Lippmann primary crusher, Cedarapids feeder and screens, and a Telsmith 48M Gyrasphere secondary reduction unit. International and Murphy diesels are used to provide equipment drive for the larger units, and for generation of power for smaller electric motors. The Hartwell quarry operation is headed by Jim Clement.

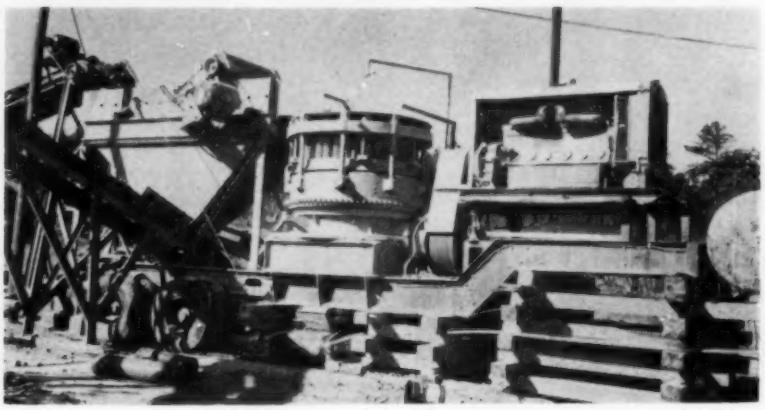
In addition to the above operations, the firm opened what is described as the southernmost crushed granite operation in the country near Macon, Ga., in the fall of 1955. Initially established to supply aggregates on an air base contract, the 150- to 175-ton-per-hour plant is now operated as a commercial crushed stone facility.

Equipment used by Clement Brothers on a contract operation to supply materials for the Hartwell Dam in Georgia includes this portable secondary crushing and screening unit.

Materials reclaimed on a tunnel belt below the stockpiles for washing are fed to the screen at the left. Washed products are then conveyed to the distributing units above the rail- and truck-loading bins in the background.

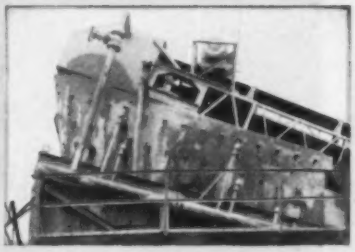
Heading the operations of this efficient new plant is J. "Fred" Clement.

From the dedusting screen (left) the stone continues its flow to the separating screen (center background) and the resulting fractions are distributed on the stockpiling conveyors.



PROFIT THROUGH ...WITH SIMPLICITY

A 4' x 12' and a 4' x 10' Triple Deck Model D Gyrating Screen, set in tandem, performs a final washing and sizing operation. The washed gravel is fed to five storage bins, so that any specification can be met by blending on the conveyor belt underneath these bins.



This Simplicity 5' x 14' Two Deck Model D Gyrating Screen takes its feed from the raw material stock pile via conveyor. All decks have washing sprays. The three products produced of sand and gravel are fed by conveyors to individual stock piles.

Aggregate is carried right from the pit to this Simplicity 3' x 8' Model BG Heavy Duty Scalping Screen. Fines are screened through to the conveyor below, while oversize is scalped to crusher.

ACCURATE SIZING GYRATING SCREENS

4,500 tons of aggregate a day is classified by four Simplicity screens at Holly Sand and Gravel, near Holly, Michigan

Working two shifts of 9 hours each, the Holly Sand and Gravel Company is daily processing 4,500 tons of aggregate, and the firm's General Manager expects to exceed this total in the near future. All this material is sized on four Simplicity screens. Simplicity Model D Gyrating Screens and a Model BG Scalping Screen efficiently and accurately classify the aggregate into grades 10A, 6A, Pea Rock, Torpedo Sand, and Mason Sand. This fast and accurate sizing is typical of the performance of Simplicity Screens throughout the aggregate industry. In addition, a 3' x 6' Model C Single Deck Screen has recently been installed to produce 100% clean Pea Pebbles, by eliminating the buckshot. The Simplicity Gyrating Screen is the original type of mechanically vibrated screen using the counterbalanced eccentric shaft. The counterbalance is machined directly on the shaft, thus giving positive action with perfect smoothness.

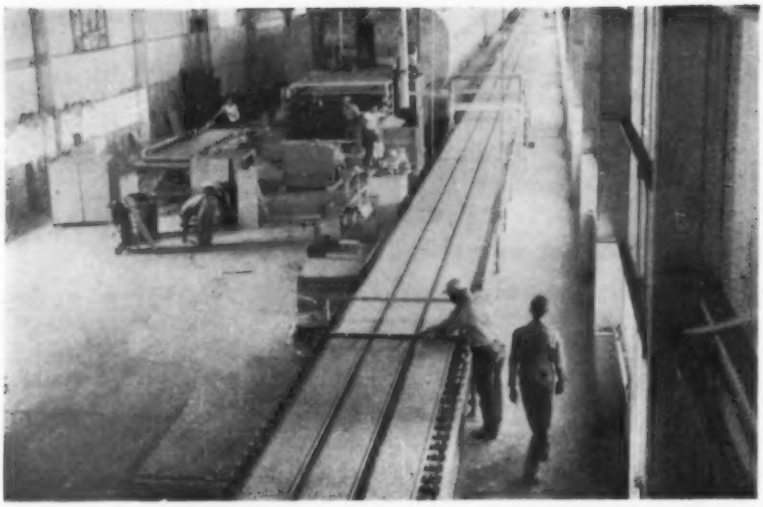
Simplicity Gyrating Scalpers are heavy-duty machines built on the same basic principles as the Gyrating Screens, but with a grizzly deck to scalp off the oversize rock. These units are designed to withstand terrific impact. They perform two jobs at once by feeding the oversize into a crusher, and screening the fines.

Wherever you need fast, efficient scalping, screening, or feeding in your aggregate operation, Simplicity equipment can be a big help to you . . . write us today for complete information.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 12, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario
FOR EXPORT: Brown and Sites, 50 Church St., New York 7, N. Y.



An interior view of the Union Gypsum Company's new board products building, showing the 410-ft. long board machine, with lath in production. At the left is the enclosed five-deck drier.

BY HARRY F. UTLEY

Union Gypsum's *Board-and-Lath Plant— Arizona's First*

Another ON THE SPOT Report

ARIZONA'S first plant for the production of gypsum wallboard and lath went into full production in January, 1956. Owned and operated by the Union Gypsum Company, the plant, located in an industrial area in Phoenix, has a capacity of 360,000 sq. ft. of ⅜-in. product per day and utilizes Arizona-mined crude gypsum as its primary raw material.

On October 31, 1956, Carleton M. Rogers and M. R. Prestridge, founder president and vice-president, respectively, resigned these posts to devote full time to their individual businesses. Both are continuing, however, to serve on Union Gypsum's board of directors and as active members of the company's executive committee. Mr. Rogers heads Pacific Rock & Gravel Company, Arcadia, Calif.; Mr. Prestridge the Prestridge Lumber Company, Alamogordo, N. M.

H. C. McQuatters is the new president and general manager of the gypsum company; Leo Hakes is vice-president for manufacturing; and Ray L. Moore is secretary-treasurer. R. G. Shorthouse Jr., office manager, was recently elected assistant secretary-treasurer.

General offices of the company are in the First National Bank Bldg. in downtown Phoenix, where Richard Gruner, general sales manager, maintains headquarters. A California sales office has been established in Los Angeles with William O. Moylan in charge. Other district sales offices are in El Paso, Tex., and Albuquerque, N. M.

The nucleus of the new wallboard plant was established about ten years ago when the concern placed a calcining and plaster plant in operation on the site. However, the calcining department has been engaged 100

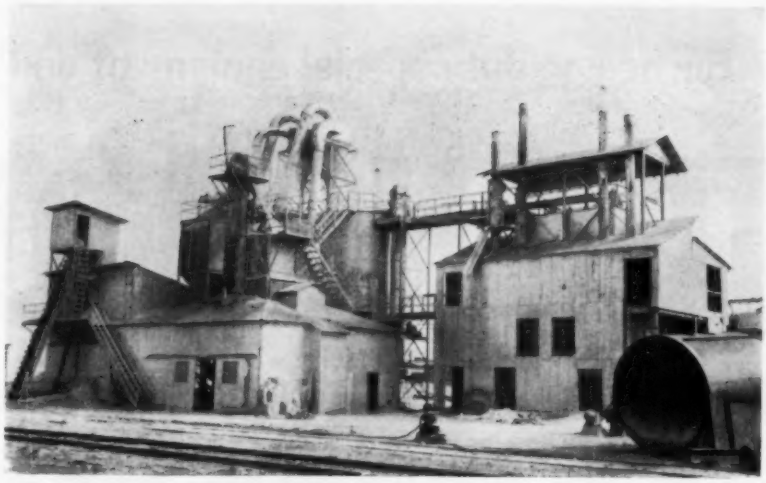
This huge building houses the board production equipment and warehousing facilities. Gypsum partition tile (foreground) is ground and used as an accelerator in board-core mix.

percent in the production of stucco to supply the new board mill during the first year of board production. the full capacity of the two 8-ton Ehrsam kettles being required for board core. A third kettle of 15-ton capacity is now being installed, however, and this added capacity will provide sufficient calcined product for the company to resume plaster production early in 1957.

The plant in Phoenix is served by both the Southern Pacific and Santa Fe railroads and the crude loading station at Winkelman, Ariz., by the Southern Pacific, the rail haul being about 90 miles. The company's gypsum deposit is located east of the town of Feldman and along the San Pedro River; the rock is trucked a distance of 11 miles to railhead at Winkelman.

Crude gypsum from the deposit varies from white to light gray in color and has an average purity of about 92 per cent $CaSO_4 \cdot 2H_2O$, just about ideal for board and plaster manufacture. Little or no stripping is necessary, the rock being overlain by high-analysis gypsite. After drilling and blasting, the quarry-run product is carried by two 15-ton Cook Bros. end-dump trucks to a Pioneer jaw-crusher, where it is reduced to a top size of 5 in. Contract truckers transport it to the rail-loading station at Winkelman.

Arriving at the Phoenix plant, the gondola cars discharge over a track hopper which feeds a Pennsylvania hammermill. Here the crude gypsum is reduced to about minus 1 in. before it is ground to 85 percent through 100-mesh by a pair of 5-roller low-side Raymond mills. Now ready for calcining, the finely-ground material is carried by screw conveyors and elevators to feed bins above the tops of the two kettles.



The grinding and calcining department was erected ten years ago to serve the plaster department. The new calcining kettle (right) awaiting installation will double the calcining capacity.

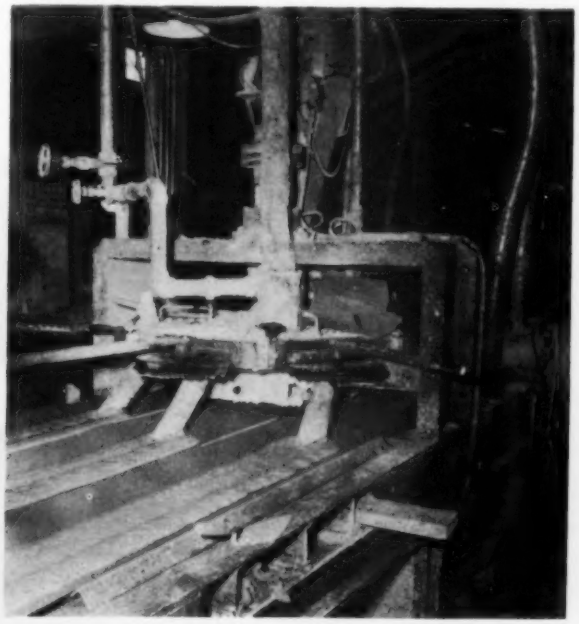
After about 2 hours of kettle cooking at about 340 deg.F., approximately 75 percent of the water of crystallization is driven off, and the hemihydrate (referred to in the trade as "stucco") is dumped to the hot pits. Recovered from the pits, it is elevated and screw-conveyed to two steel stucco-storage bins erected adjacent to and just outside the new board-plant structure. Each of these conical-bottom bins has a capacity of 180 tons; they supply stucco to the proportioning equipment on the floor above the head end of the board machine.

Calcined gypsum (stucco), when mixed with water, has a recrystallization or setting time of 30 to 40 minutes. This is too fast a set for trowelling when used in plaster, so a retarder must be added. In the production of board, however, the set is too slow for economical board formation. It is therefore necessary to accelerate the stucco so that it will set in 3 or 4 minutes on the board-machine belt. Crude gypsum in itself is a fairly good accelerator; but the Union plant, in accord with a practice quite general in the in-

(*Continued on page* 112)

Right: The three feed spouts of the pin-type mixer deposit core on the paper ahead of the forming rolls.

Below: Scrap paper is beaten to a fine pulp in this aqua-pulper, then pumped to the mixer for addition as a board-core ingredient.



For heavy-duty special equipment and truck application...

TDA® NOW OFFERS

today's broadest range of

PLANETARY AXLES

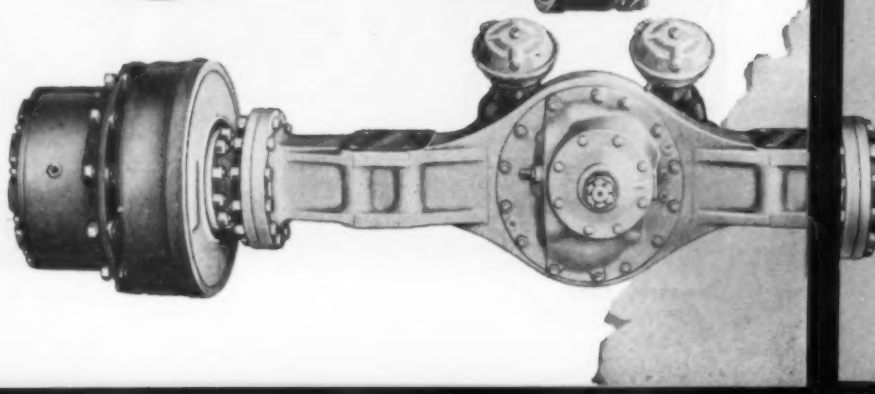
steering and rigid...from 11,000 to 75,000 lb. capacities!

A complete range of new planetary heavy-duty axles—with a steering axle operationally matched to each rigid axle in the line—is now included in the Timken-Detroit® family of advanced design axles. This matching of steering and rigid units brings you just the right axles for every requirement in both special off-the-road equipment and heavy-duty trucks.

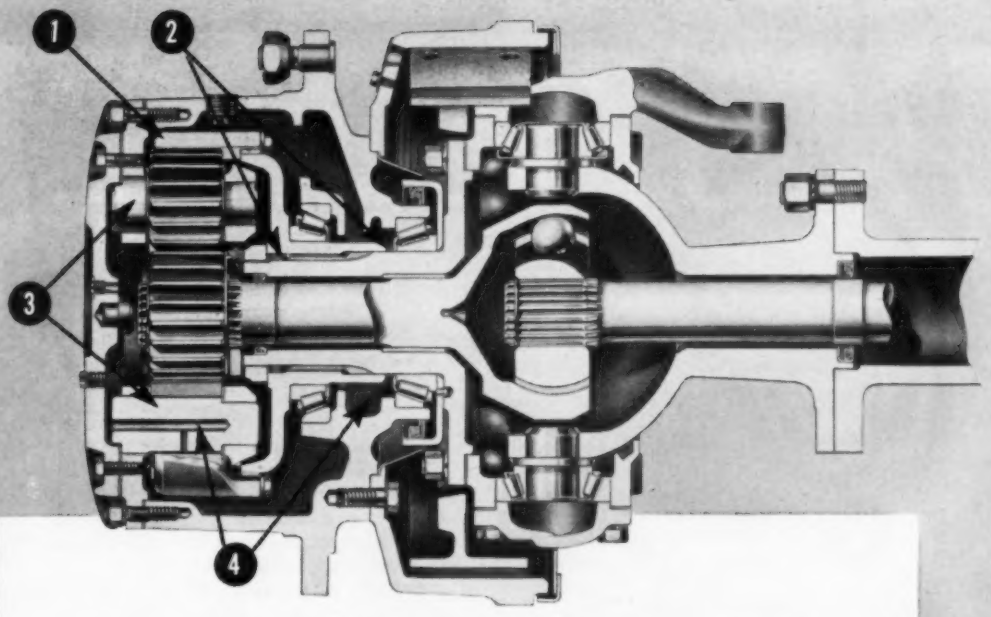
Years of research and development have resulted in these new and exclusive planetary OUTER-END features: *floating ring gears—concentrically mounted ring gear hubs—full-flow lubrication of all bearings and planet gears—special forged bronze planet pinion pins—and an unusually high degree of parts interchangeability.*

Because of their versatility, ruggedness and almost unlimited gear reductions, these new, full planetary axles are going into use all over the world on heavy-duty prime movers, big four-wheel tractors, off-road rock wagons, mining equipment, heavy-duty scrapers, front-end loaders and other heavy-duty equipment.

PLANETARY STEERING AXLE



PLANETARY RIGID AXLE



Only New Timken® Full Planetary Design Brings You These Features for Extra-Long Life, and Extra Dependability:

1. **New Floating Ring Gear** . . . Ring gear and hub are two separate pieces. Ring gear is free to float radially. This feature, combined with floating sun gear, assures equal distribution of stresses to *all* planetary gears, gives longer, trouble-free gear life.

2. **Concentrically Ground Ring Gear Hub and Spindle Mounting Surfaces** . . . Concentrical grinding around a common center assures perfect alignment and fit—plus freedom from bending forces on the hub and spindle splines. Splines absorb only torsional stresses from the ring gear and transmit them to the housing.

3. **Special Forged Bronze Planet Pinion Pins** . . . Pins are forged of special alloy bronze for longer, trouble-free operation. Rifle drilled lubrication channels and machined lubrication flats assure full time lubrication of the planet pinions. When cover is assembled pin is locked in place to prevent rotation—resulting in longer pin life.

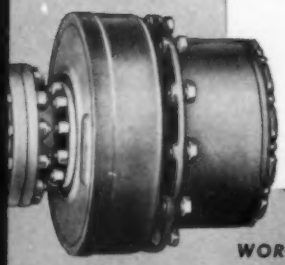
4. **Full-Flow Lubrication** . . . Design of Timken planetary axles assures constant flow of lubricants to wheel bearings and all planet gears while vehicle is in operation. Wheel hub and planetary spider pick up oil in the cast reservoirs as they rotate and channel it to wheel bearings and pinions. When vehicle is not in motion oil is retained in these chambers providing ample initial lubrication for all moving parts.

5. **High Degree of Parts Interchangeability** . . . Important to service and operation is the high degree of parts interchangeability between both rigid and steering axles in the same planetary series. This means a smaller parts inventory, low maintenance costs and more productive time with Timken planetary axle equipped vehicles.

Plants at:
Detroit, Michigan • Oshkosh, Wisconsin
Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

©1957, RS&A Company

For complete information on the TDA family of planetary axles—write Timken-Detroit Axle Division, Detroit 32, Michigan . . . or visit the TDA display at Booth No. 364 at the 1957 Road Show—Chicago Amphitheater, January 28th through February 2nd!



TIMKEN Detroit AXLES
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN
The Accepted TDA Standard
TRADE MARK REGISTERED

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSSES AND TRAILERS

Business Decisions That Affect Your Income Tax Return

This article is based on information supplied by the American Institute of Accountants, the national professional organization of certified public accountants, and checked for technical accuracy by the Internal Revenue Service.

LONG-RANGE tax planning in today's business world of high tax rates is no longer "big business foolishness." Last-minute tax worrying with no year-round tax thinking can result in the loss of sizable savings for small and medium-sized businesses when it is time to file a tax return.

Trade In Or Sell? For example, assume that last summer you were forced to replace your air conditioner. You found that you could sell your old unit to an individual for $500 or to a dealer who would give you a trade-in allowance of $500 on it. Without thinking about tax matters you traded in the old air conditioner.

To prove how much a seemingly simple business decision such as this can affect the tax you will have to pay, let us assume further that the air conditioner which you traded had originally cost $2,500 and that you had taken $1,000 in depreciation on it. This meant its cost for tax purposes was $1,500, and you were going to "lose" $1,000 whether you accepted the dealer's trade-in allowance of $500 or sold to the private person for $500.

So far it is still six of one, half a dozen of another; but now, since you elected to trade in your old air conditioner, let us see how you can claim a deduction on a tax return for your $1,000 loss. The answer is simple. You can't. All you can do is to add the amount of the loss to the cost of your new unit, and eventually receive tax credit for your loss in the form of slightly higher depreciation deductions.

On the other hand, if you had made a *bona fide* sale of your old unit to the private person and a separate purchase of a new unit from a dealer, you would have established a $1,000 loss which could be claimed as a loss deduction on a tax return and used to offset regular income.

It is not always true, of course, that a loss deduction on the tax return is worth two in the bush of depreciation; but a general rule to consider when you are trying to decide whether it would be more advantageous taxwise for you to sell or trade in an asset is: sell "loss" property to obtain a deduction, and trade "profit" property to avoid the tax which must be paid on any profit realized from the sale of an asset.

Computing Depreciation You may find that you have sold yourself into a capital gains tax or traded yourself out of a loss deduction if you have not figured your depreciated costs correctly. This is a matter you should discuss with a certified public accountant. Not only can he verify the accuracy of your mathematical computations, but he can also explain the advantages and disadvantages of the various methods used to compute depreciation. It could be that the method you used or are using is not the one most suited to your business needs from a tax standpoint.

For example, if you asked a certified public accountant whether you should use the straight-line or declining balance method to depreciate your new air conditioner, one of the first questions he might ask you would be: What are your cash requirements and what are your profits likely to be? If you are thinking of expanding and need additional cash within the next few years, he might recommend that you use the "new" declining balance method to compute depreciation.

The declining balance method "speeds up" or increases depreciation rates. This starts the chain reaction to your objective of retaining cash in the business, because when you increase depreciation rates you also increase allowable depreciation deductions on your tax return. The amount you may write off the first year is twice what it would be if you used the straight-line method; so by applying a $1,000 instead of $500 depreciation deduction against your regular income, you are going to reduce your taxes, and cash that does not have to be paid out in federal taxes can be retained in the business for expansion purposes.

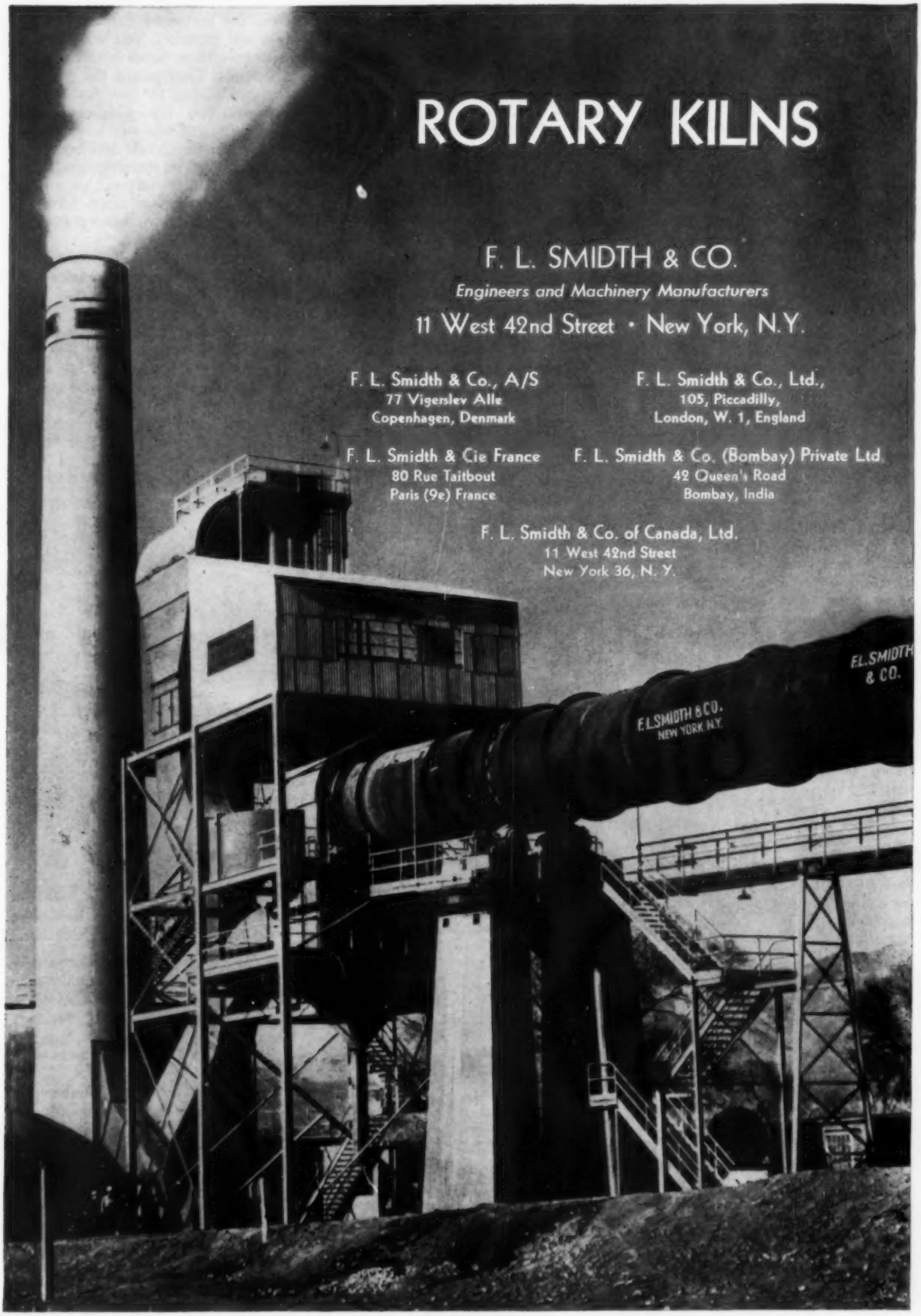
It seems all good things eventually come to an end, however, and while in the first year the declining balance depreciation rate may be double that of the straight-line, this differential diminishes in succeeding years until declining balance deductions are even less than they would be under the straight-line method. This is why it is important that you consider current and future earnings before you select a depreciation method.

For example, if your current earnings are low, or if you are putting in a new line of merchandise and the results of this expansion will take a few years to show in your earnings, it might be more advantageous taxwise for you to use the straight-line method of computing depreciation.

The straight-line method does not "speed up" depreciation deductions. It spreads them out equally over the estimated useful life of the asset; so when you use a straight-line method, you are saving, in a sense, for a rainy day. When your earnings improve or increase, you will have more substantial depreciation deductions to apply against those earnings. There usually is no point in increasing a loss or reducing low earnings by claiming additional depreciation deductions when you do not need them.

A point to remember when you are trying to decide whether to buy new or used equipment is that second-hand equipment *must* be depreciated by the straight-line method. This tax factor should be considered, because the loss of an opportunity to use the declining balance method with its rapid write-off feature may cancel any immediate savings effected by the purchase of used equipment.

The Case for Incorporation The matter may have been decided and forgotten many years ago, but a basic question businessmen should consider from time to time—and one which has many tax implications — is whether to do business as a pro-


ROTARY KILNS
F. L. SMIDTH & CO.
Engineers and Machinery Manufacturers
11 West 42nd Street · New York, N.Y.
F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark
F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England
F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France
F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India
F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.
F.L.SMIDTH & CO.
F.L.SMIDTH & CO.
NEW YORK N.Y.

prietorship, a partnership, or a corporation. There may be personal or professional factors that force the selection and maintenance of a non-corporate form of organization, but depending on the earnings of the business and the amount of those earnings you may need to withdraw, there are certain tax advantages to be gained by incorporating a new or expanding company.

Since proprietorship and partnership income is taxed at individual rates, which range anywhere from 20 per cent to 91 percent, and corporation earnings are taxed at corporate rates of 30 percent on the first $25,000 earned during the year and 52 percent on the excess, it might appear that if you have relatively low income, the proprietorship-partnership rates are lower. However, you must also consider that the corporate tax carries with it the privilege of deducting a reasonable salary paid to an employee-owner. The employee-owner has to pay a personal tax on his salary, of course, but if he were not incorporated, he would have to pay a personal tax on all the money earned by the business.

If the retained earnings of the company are taxed at a corporate rate which is lower than what the personal tax rate would be, the employee-owner would benefit by having additional funds available in the corporation for expansion purposes. These funds may be accumulated in a corporation up to $60,000 without further tax penalties, and even higher if the corporation can prove a need for them.

These advantages — while they may cut your current tax bill and increase working capital for expansion needs—can be lost if you have jumped into a corporation without first reviewing your own long-range cash requirements. If you are continually forced to withdraw money from the corporate earnings to pay personal expenses, you will have to withdraw these funds in the form of dividends. That means the corporation will have to pay tax on the earnings you are withdrawing as dividends, and you will have to pay tax on the dividends received. The "double tax" on earnings and dividends can nullify any tax advantage from incorporation when earnings must be withdrawn immediately as dividends.

Many businessmen seek professional advice about tax matters as they do professional assistance with their golf game—when the slice has become almost unbearable. You can save tax dollars by realizing that business decisions made in the fall affect the amount of tax you must pay in the spring. Practice year-round tax thinking, and consult a certified public accountant when you are in doubt as to the tax effect of even the most routine business decision.

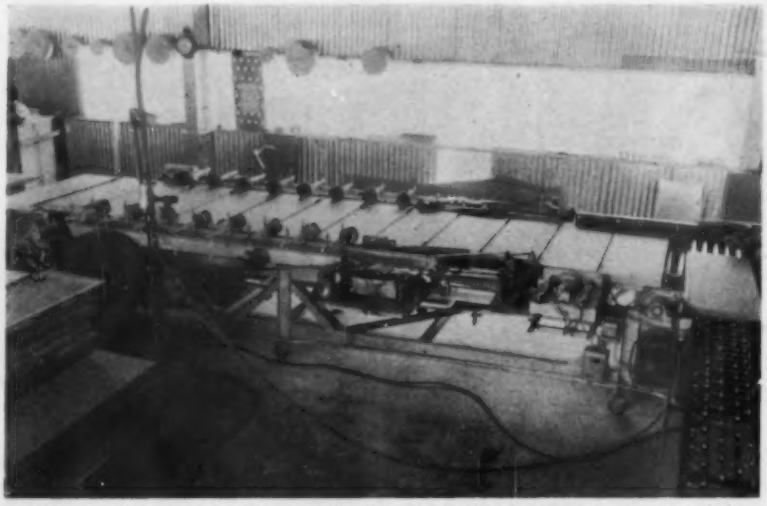
Union Gypsum

(*From page* 103)

dustry, uses freshly-ground gypsum partition tile as an accelerator. This, along with other ingredients such as starch foaming agent and finely-beaten paper pulp, are delivered along with the stucco directly to the pin-type mixer ahead of the forming rolls of the Ehrsam board machine. Some glass fiber and vermiculite are also incorporated in the mix when extra-thick (⅝-in.) fire-coded board carrying the Underwriters' 1-hr. fire rating is being made.

It is of interest that, along with other progressive board manufacturers, the Union plant uses no sawdust in the mix. Instead, scrap paper comminuted by beaters into an extremely-fine pulp in an Apmew AquaPulper, is pumped directly to the mixer, where it is introduced into the mix in the proper ratio.

The mixer continuously discharges through three spouts onto the 48-in. width of the board machine, or it forms three strips if lath is being produced. Paper for the face and backing of the board products is fed conventionally from rolls, the paper storage being conveniently nearby where the rolls can be handled with dispatch by lift trucks. Master rolls regulate the thickness of the board, which then moves along on the 52-in. by 320-ft. Goodyear neoprene flat belt at a speed of about 70 f.p.m. By the time it reaches the end of the belt, the board has set sufficiently to support its own weight and continues to travel over the remaining 90-ft. length of the board machine over bronze live-rolls; it is cut and punched (if desired for lath), and then transferred, and the direction of travel is reversed to enter the drier.



After removal from the take-off end of the drier, the finished board sections are bundled for shipment on this machine.

The Coe drier is a 5-deck installation about 300 ft. in length including the feed and take-off ends. The drier portion proper is 277 ft. long, divided into three zones. It is direct-fired with natural gas in a honeycomb type burner. Heat for drying is circulated by fans and fan-exhausted, along with the removed moisture, into the atmosphere.

The dried product is removed manually at the take-off end, the sections being checked frequently with a moisture meter to make sure that they are thoroughly dry. Wallboard is packaged on a Brackett bundling machine; lath is bundled by equipment designed and built by the company.

All board product, whether for local consumption in Phoenix or shipped some distance, leaves the plant by rail. Lath is usually shipped in boxcars, and the wallboard, protected by waterproof paper and secured by steel strapping, in bulkhead-type flat cars.

The market area served by the plant includes all of Arizona, California, and New Mexico, and portions of western Texas.

There's a new and interesting treat in store for you when this traveling Atlas ROCKMASTER® *Exhibit comes rolling into your area.*

Atlas has virtually put a theater on wheels, to bring you a complete demonstration of efficient, modern blasting methods. In this unusual exhibit booth, you can relax in a comfortable seat while sound films in color bring you the latest and best information on modern confined blasting: the kind that provides maximum breakage with minimum noise and vibration. In special stereo viewers, you can examine the details of blasting action and loading techniques which you may be able to apply in your operations.

Charts and other visual exhibits are displayed to make your "visit in the Volkswagen" the most interesting, informative half-hour you've ever spent! You'll see the latest drilling, loading and shooting methods, graphically illustrated . . . a bus load of ideas which could mean increased profit for you through better blasting.

It's another first by Atlas, and is now starting to tour the country. Don't miss it. Check with your Atlas representative to find out when it will be in your area!

Bus Load of Blasting Ideas . . . *coming your way*

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

FOR

Steadier Arc

Steadier Voltage

Smoother, Faster Application

USE

VICTOR

Automatic Rods

Victor automatic hardfacing alloys go on 3 to 4 times faster than manually-applied hardfacing, enable you to make big savings in labor costs. And if you're repairing equipment, cutting down time by ⅔ or ¾ likewise is a terrific saving. You get a more uniform deposit, too, from Victor automatic hardfacing alloys, resulting in longer, more even wear. Check this chart — you'll find there's a Victor type for every hardfacing need.

Learn for yourself how hardfacing with Victor automatic rod reduces labor and repair down time. Ask your Victor dealer for Bulletin 358 — or better yet, order a coil of rod NOW and try it on your job.

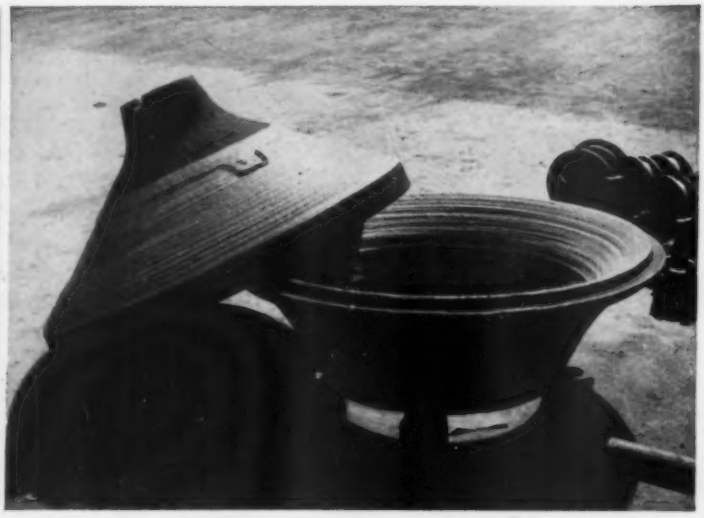
PROFITABLE DEALERSHIPS OPEN; INQUIRE NOW!

33

VICTOR EQUIPMENT COMPANY

ALLOY ROD AND METAL DIVISION

Los Angeles 59, California • Wakita, Oklahoma



Note even deposit of Victor VA#3 automatic rod on gyratory crusher cones.

TYPE	USES	PROPERTIES AND APPLICATION
VA#1	Crusher Rolls Gyratory Crushers Crusher Mantels Scraper Blades	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high AC-DC submerged arc or DC open arc
VA#2	Pinch Rolls Tractor Idlers Tool Joints Coiler Rolls	Rockwell 'C' 50-52 Impact Resistance—good Abrasion Resistance—good Submerged arc only Suitable for multiple passes
VA#3	Roll Crushers Gyratory Crushers Impellors Mill Guides	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high For use where abrasion is severe Submerged arc only
VA#4	Tractor Rollers Sheave Wheels Tractor Idlers	Rockwell 'C' 25-28 Impact Resistance—excellent Abrasion Resistance—good Submerged arc only Suitable for multiple passes Machineable
VA#5	Tractor Rollers Sheave Wheels Tractor Idlers Grader Blades	Rockwell 'C' 34-38 Impact Resistance—high Abrasion Resistance—good Suitable for multiple passes Submerged arc only
VA#6	Crane Wheels Roll Necks Pump Sleeves	Rockwell 'C' 38-41 Impact Resistance—high Abrasion Resistance—fair Suitable for multiple passes Deposit machineable Submerged arc only
VA#7	Excellent base for high alloy application. Mine Car Wheels	Rockwell 'C' 36-42 Impact Resistance—excellent Abrasion Resistance—good Suitable for multiple passes Deposit machineable Submerged arc only
VA#8	Tool Joints Grader Blades Scraper Blades Roll Crushers	Rockwell 'C' 51-54 Impact Resistance—high Abrasion Resistance—high Submerged arc only
VT#60	Tool Joints Grader Blades Scraper Blades	Automatic Tungsten carbide wire Abrasion Resistance—excellent (maximum) Deposits are heterogeneous Open arc—DC reverse only

Rod diameters 1/8", 5/32" and 3/16". Standard coil size, 22-1/2" inside diameter, 4" wide, approximate weight 100 lbs.

ENGINEERS SERVING THE ROCK PRODUCTS INDUSTRY FOR OVER 30 YEARS

Peerless Cement Corporation
Port Huron, Michigan Plant

Is AUTOMATION the Answer . . . for You ?

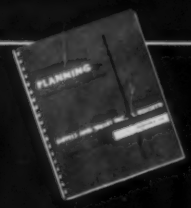
What yardstick can a management man use to evaluate Automation for his company?

Will it increase productivity, decrease costs, improve product quality—and to what degree? What capital investment is required, and how can it be amortized?

These are the questions which must be answered. They are the kind of problems which clients regularly bring to G & V for analysis and solution.

Giffels & Vallet's broad experience in the planning and engineering of production facilities . . . for many companies in many industries . . . at home and abroad . . . has brought about a practical insight and understanding of the complex problems involved . . . and their solution.

This is experience available to you—in the development of new plant facilities and modernization programs.



G & V services are discussed in a special Planning Brochure. A copy will be mailed on request.

INDUSTRIAL ENGINEERING DIVISION

Giffels & Vallet inc.

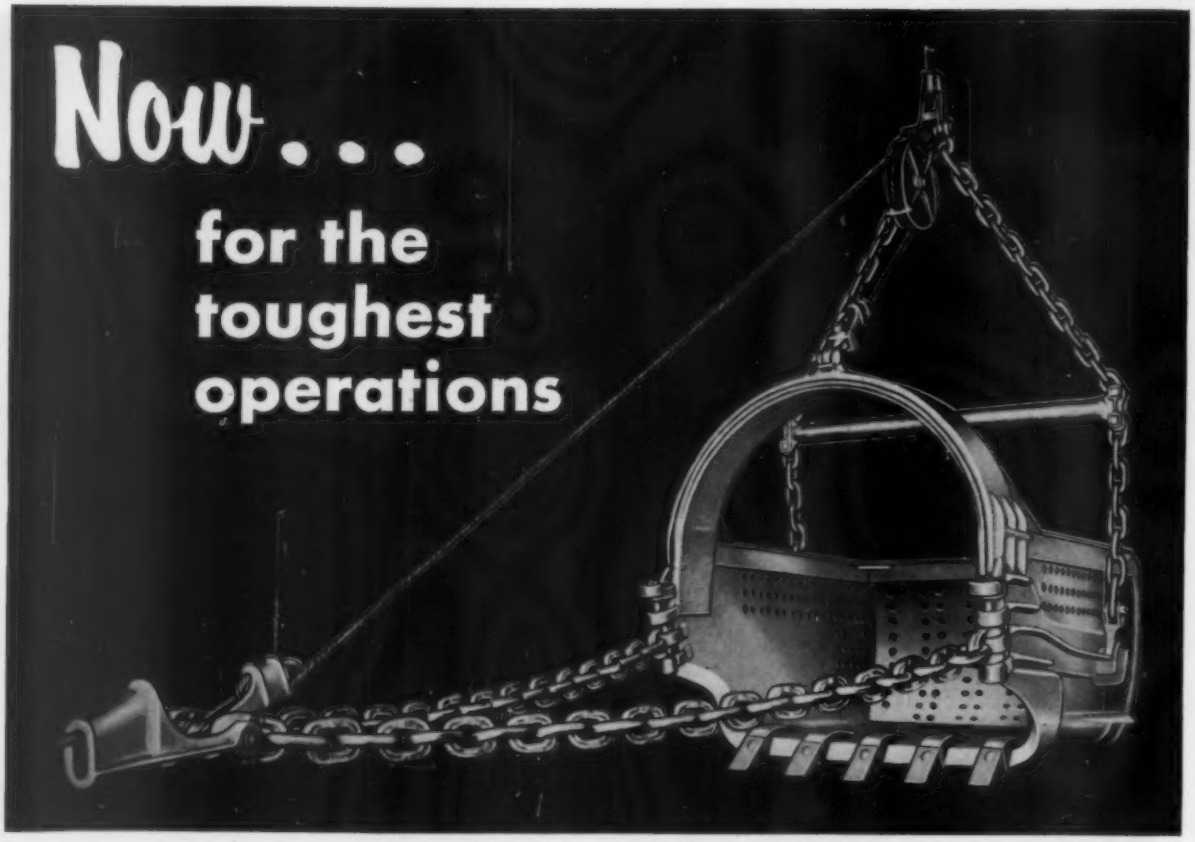
DETROIT 26, MICHIGAN New York, Chicago, Houston

Canadian Affiliate: Giffels & Vallet Ltd., Toronto and Windsor

Plant Layout • Process Development • Automation Engineering • Materials Handling • Equipment Design • Building Design

Now . . .

for the toughest operations



the new "MH"

HENDRIX

Heavy Duty Mining Bucket

now there are . . .

4 TYPES

designed for every digging purpose

"LS"

"TS"

"HS"

and the new

"MH"

Designed to meet the problem of rising stripping costs, the new Type "MH" Hendrix is engineered and built to take the abuse of the most rugged stripping conditions. Like all other Hendrix Buckets, the Type "MH" assures GREATER PRODUCTION at the lowest cost-per-yard for MORE PROFITS on every job.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS

NEW THOR SELF-PROPELLED ONE-MAN DRILLCAT

First on-the-job reports prove Drillcat delivers more work, bigger profits, in less time

CHECK THIS PROOF DIRECT FROM THE JOB

PAID FOR ITSELF IN ONE JOB

A net profit of $15,000 in one week on rock drilling jobs was reported by one contractor—another, equipped with five Thor Drillcats paid for them in three months from extra profits.

SAVES OVER 2½ HOURS SET-UP TIME

You can set a Thor Drillcat in drilling position—ready to go—in 20 to 25 minutes.

FAST WHEN THE GOING IS TOUGHEST

One man on a Drillcat tugged a 600 c.f.m. air compressor ½ mile over rough terrain, drilled five holes and was back with equipment at his starting point in only two hours.

DRILLING TOE HOLES. The Thor Drillcat is completely flexible. The boom and mast are lowered flat to the ground for toe and lifter holes. Twin reversible drive air motors permit easy maneuvering to any position, any angle. (Note position of controls for easy operation.) A "dead man" control for all air valves is standard equipment on the Drillcat.

DRILLING DOWN HOLES. Two 7½ h.p. air motors propel this compact (6 ft. 9 in. overall) Thor Drillcat where no other crawler can go. More than enough power to pull its own air supply. Drilling down holes is no chore for Thor's Drillcat. Using the powerful model 105M drifter and chain feed mast, the hydraulic accumulator keeps boom rigid at all times. This means less steel breakage and less wear on chuck parts.

These exclusive features make Thor model MM-2 Drillcat the most productive rock-drill you can buy! Ask any Thor distributor for a Drillcat demonstration.

● Thor's super-powered 105M drifter rock drill. ● Rugged Thor BW-2 wagon drill mast and air control motor. ● Self-propelled with two 7½ h.p. Eimco air motors, power aplenty to haul itself and air supply. ● Rigid frame, proved in tractor design, no moving or wearing parts, long lasting, low maintenance. ● Aircraft-type accumulator in hydraulic system absorbs shock. ● Simple hand-operated track take-up. No tools required. No track locks required. ● Large flat platform. Ideal for operator when drilling toe holes, good for tool and fuel storage.

VISIT THOR EXHIBIT, ARBA SHOW

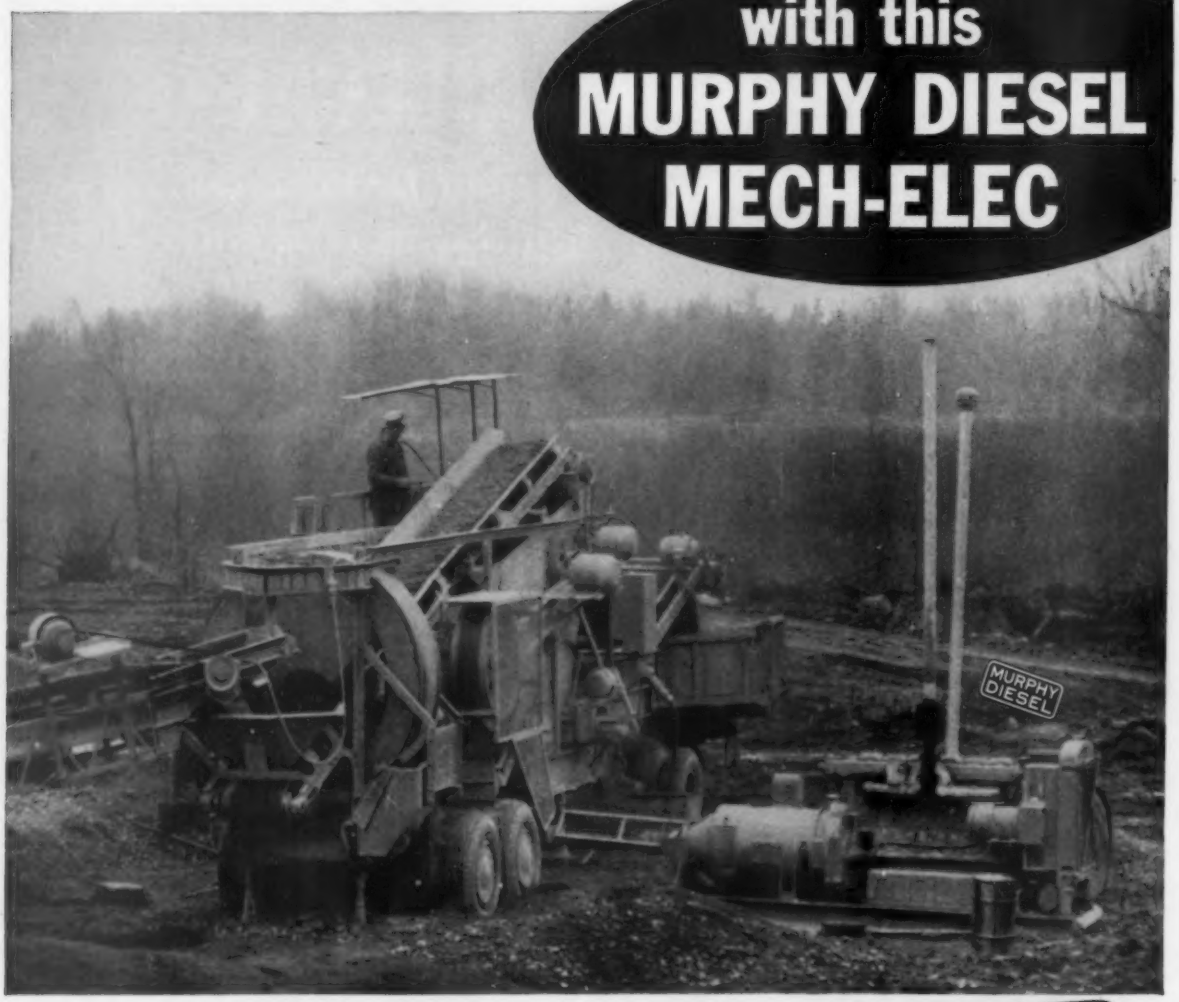
Booth 706, Section D, International Amphitheatre
Chicago, January 28 through February 2

Thor
PORTABLE POWER
TOOLS

THOR POWER TOOL COMPANY
Aurora, Illinois
Branches in all principal cities

Menard Construction Company Gets *BOTH*...

with this MURPHY DIESEL MECH-ELEC



For turning glacial till into specification aggregate by the most modern and efficient method, Menard Construction Company, of Green Valley, Ontario, powers their crushing plant with a Murphy Diesel Model 124 Mech-Elec Unit. *This single, compact power package supplies both heavy-duty mechanical power for the crusher and low-cost electric power for conveyor drives and screens, either simultaneously or separately.*

Whatever type of power . . . mechanical, electric, or both . . . is best for your job, Murphy Diesel engines, generator sets or Mech-Elec Units give you the economy of operation and dependability in heavy-duty service that keeps profits high and costs low. Ask your Murphy Diesel Dealer to recommend the Murphy unit best suited to your needs.

355RO

MURPHY DIESEL

HEAVY-DUTY POWER
for Rock Crushing

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY
5307 W. Burnham St., Milwaukee 14, Wis.

In cramped quarters like this, Tournapull Rear-Dump turns in dump position, which moves rear wheels forward for extremely short wheel-base. With bowl raised, 22-ton capacity C Tournapull, shown, turns 180° in only 20' 8" wide area, without backing.

Short 180° turns

boost pit output, cut handling costs

If you are interested in cutting cycle time on your pit hauls, consider Tournapull Rear-Dumps.

These high-production units are extremely maneuverable, can back into a shovel or restricted dump area faster than any haulers on the market. They make 180° turns by power steer thru geared king-pin in less than their own length. They eliminate time normally wasted maneuvering back and forth to turn in narrow quarters. They also frequently eliminate expense involved in construction of skid-plates or special turn-around areas.

Even where space is unlimited, rig's 90° prime-mover-turn gives you faster cycles. At the shovel, fast-maneuvering Tournapull Rear-Dump swings in and positions in 1 quick move. Loading unit need not sit idle while hauler operator wastes time on a wide sweeping turn, and a long, slow back-in. Quick, safe spotting saves additional production time at grizzly or dump.

Simplicity reduces maintenance

A great deal of your usual maintenance expense is also eliminated because of the simplicity of Tournapull's turn mechanism. Steering involves only an electric motor, connected to a rugged ring gear king-pin shaft. A flick of operator's finger activates motor . . . causes prime-mover to pivot up to 90° around trailing unit. Turns are made quickly, regardless of footing. There are no front steering knuckles, no reach rods, no complicated mechanisms to get out of line, maintain, or repair.

Check these, and all the other advantages of Tournapull Rear-Dumps. See for yourself how they speed haul cycles and cut costs. Write or call, any time, for owner-verified production studies and specifications. There's no obligation.

Model	Capacity	HP	Overall Length	Width req'd. for 180° turn	
				Travel position	Dump position
D	11 tons	138	24'10"	24'8"	18'8"
C	22 tons	208	29'9"	28'8"	20'8"
B	35 tons	293	35'10"	35'	27'

These features, too, cut your hauling costs

Hauls anywhere—Travels safely over narrow haul roads, paved highways, city streets. . . hauls cross-country over terrain, thru muck, rock, and soft fill.

Dumps fast, clean — Electric motor lifts body quickly to any desired dump angle . . . bowl tips behind rear wheels for clean over-bank spill. Streamlined body sheds material readily.

Cuts weather delays — Power-transfer differential applies extra power to wheel on firmest footing . . . pulls rig through mud, sand, soft materials.

Rugged body loads easily — Big bowl opening is easy loading target. Three layer, *all-steel* bowl with tool-steel floor resists wear and shock. Available with optional tailgate.

Improves safety — More than 4 times the braking surface of ordinary haulers plus optional electrotarder, low center of gravity, excellent visibility, front-wheel drive, easy control, all contribute to maximum safety.

Reduces fatigue — Big tires and air-foam cushioned seat smooth out ride for operator. Electric power steer and 2-way power dump make work easy.

Insures future earnings — Behind basic prime-mover you can interchange other trail units: scraper, bottom-dump, lift-and-carry crane, logging-arch, flat-bed hauler. Keeps your Tournapull busy at a profit all year-around.

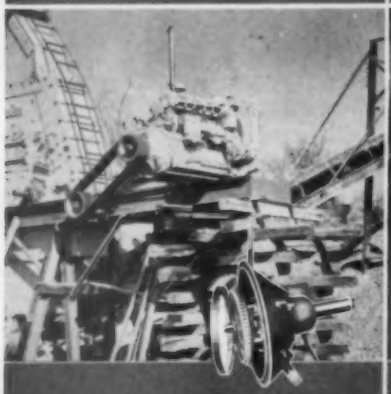
Tournapull—Trademark Reg. U.S. Pat. Off. R-1168-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

CRAWLER TORQUE CONVERTER

FLUID POWER TAKE-OFF

TRUCK-TYPE TORQUE CONVERTER



FRICTION POWER TAKE-OFF

FLUID COUPLING

CL FRICTION CLUTCH

At nearly every pit and quarry you find TWIN DISC

At nearly every pit and quarry, you're likely to find Twin Disc Friction or Fluid Drives dependably applying power to driven equipment.

In removing overburden, you'll find the biggest crawler tractors driving through Twin Disc Torque Converters . . . power shovels, equipped with either Twin Disc Converters or Fluid Power Take-Offs . . . and trucks incorporating Twin Disc Truck-Type Torque Converters.

In the production of aggregate, you'll find stationary power units equipped with rugged Twin Disc Friction Power Take-Offs . . . conveyor systems, receiving a *shock-cushioning* flow of power through Twin Disc Fluid Couplings . . . and drills, equipped with Twin Disc Model CL or EH Friction Clutches.

Today, Twin Disc is the world's largest exclusive manufacturer of a complete line of friction and fluid drives—for correctly linking horsepower to industrial powered equipment. Since 1918, Twin Disc *specialists* have designed and built friction and fluid drives *for that one purpose.*

If *you* have a power transmission headache—consult the Twin Disc Clutch Company, Racine, Wis., Hydraulic Division, Rockford, Ill.

TWIN DISC

TWIN DISC

Friction Clutches and Fluid Drives

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois

Allis-Chalmers

model D

THE LOW-COST MOTOR GRADER THAT OFFERS

more of everything...

more PRODUCTION-BOOSTING FEATURES

Choice of Allis-Chalmers engines

GASOLINE — 50 brake hp. Bare grader weight —8,800 lb. Four forward speeds to 25.6 mph, one reverse to 3.3 mph.

DIESEL — 50 brake hp. Bare grader weight — 9,350 lb. Four forward speeds to 25.2 mph, one reverse to 3.2 mph.

ROLL-AWAY moldboard rolls the load instead of pushing it, moves more dirt, uses less power.

Plus one-piece tubular frame, tandem drive, real operator comfort, hydraulic blade lift.

USEFUL OPTIONAL FEATURES

Power circle turn for faster, easier, better control of blade . . . turns 135 degrees.

Leaning front wheels with heavy-duty axle, for better control in close quarter-work.

Hydraulically shiftable moldboard to speed work around obstructions. Shifts 16 in. each way.

Special large tires for added traction, long wear. Front (7.50-20 or 8.25-20) and rear (8.25-20).

more JOB-MULTIPLYING ATTACHMENTS

Hydraulic scarifier, mounted amidships for maximum effective ground pressure.

Shoulder maintainer for safe, one-pass operation. Also available: one-pass windrow eliminator.

Rear-mounted 5/8-yd loader for fast, low-cost handling of materials.

plus snowplows, completely enclosed standup cab, hydraulically operated mower.

more SATISFIED USERS

Since its introduction in 1949, thousands of satisfied owners have *proved* the usefulness and low-cost versatility of the Model D on all kinds of construction and maintenance.

Call your Allis-Chalmers Construction Machinery Dealer for a demonstration today!

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

ROLL-AWAY is an Allis-Chalmers trademark.

1956 has, in many respects, been a record year for us . . . characterized by advances in technology and an all-time high in volume of new orders and also billings throughout the world. This meant a year of strenuous adjustment due to the necessity of increasing our productive capacity to parallel our growing volume of business.

The acquisition of the Merco Centrifugal Co. of San Francisco on February 1, added centrifugals to our product line. This natural outgrowth of our cyclone work has proven to be a most successful move. Similarly, the year has demonstrated the strength of our new Canadian subsidiary, Dorr-Oliver-Long of Orillia, which became the newest member of our corporate family on January 1, 1956. Yet another step in the overall corporate growth picture was the completion of plans to add the ninth member of our overseas family, Dorr-Oliver Pty. Ltd. of Australia on January 1 of 1957.

Steps in matching our productive capacity to our growing needs included a million dollar expansion of our Hazleton plant scheduled for completion at the year's end and the opening of a sizable new production facility nearby in Pennsylvania. Currently, a long term expansion and reallocation program is underway which will step-up our ability to produce, and to serve, still further.

Growth and change in other operating areas of the parent company also kept pace. A broad reorganization of our domestic sales structure added new geographical divisions and was principally designed for better sales coverage and service. In engineering, the pressure of increased volume resulted in the opening of a branch engineering office in Pennsylvania, close by our East Coast plants, which has proven to be most worthwhile.

FERTILIZER — One of the highlights of the past year was the largest single D-O order ever received involving a phosphoric acid and 200,000 ton per year triple superphosphate plant for a Florida producer. The scope of our services on this project includes architect-engineer design, supply of equipment and construction materials, and supervision of erection and initial operation of the plant.

Other major design projects undertaken during the year were a 350,000 ton per year complete granular fertilizer plant in Great Britain, a 350 ton per day ammonium phosphate installation in Montana, and a phosphoric acid plant for Venezuela designed to produce 50 tons of P_2O_5 per day. During the year construction of a D-O engineered Scottish granular fertilizer plant was virtually completed, and Traveling Pan Filters were ordered for the difficult gypsum-phosphoric acid separation in a number of new chemical fertilizer plants around the world.

SANITATION — The new Spirovortex-Superate Filter will produce a degree of purity comparable to that attained using the activated sludge process in plants treating up to one MGD of domestic sewage. We have developed the Degritting Clarifier and Clarigester for low cost grit removal in small plants and during the year we have incorporated important new features into the design of our Vacuum Filters for the sanitary field.

The completely D-O equipped sewage treatment plant for Karachi, Pakistan, represents the largest order in the sanitary field ever entered by our associates in The Netherlands. Typical of other new D-O equipped installations are those under construction in such diverse locations as Charlottesville, Virginia; Caldwell, Idaho; Midwest City, Oklahoma; Delhi, India; Nairobi, Kenya; and Rio de Janeiro, Brazil. Expansion of Providence, Rhode Island, treatment facilities calls for installation of nine Dorr Clarifiers, all over 100 feet square, and at Louisville, Kentucky, four 275 foot long Monorake units will be added.

METALLURGICAL — Recently placed on the market, the DSM Screen is an ingenious, high capacity screen capable of separations as fine as 200 mesh. Adapted from the Dutch design, the unit has operated very successfully on coal and will handle a wide variety of non-fibrous feed slurries. Other highlights of the year include a number of Thickener-Filter combinations and Bowl Desiltors installed in Eastern coal fields, a D-O equipped iron ore washing plant in California, and a variety of cement plant expansion equipment orders.

RESEARCH AND DEVELOPMENT — As a matter of policy, fundamental research continues on our expanding line of basic unit operations. The principle of operating in many different but allied fields stimulates situations wherein fundamental research can produce new and useful products and processes. Such is not possible when interest is confined to but a few basic operations, as in our early years.

Similarly, general company development is continuing the search for new products allied in some manner with our experience and facilities. In this search we count heavily on the assistance and cooperation of our Associates throughout the world.

ALUMINA AND MAGNESIA — Plant expansions in both fields contributed heavily to the year's business as four of the world's major alumina producers in the Gulf Coast area and Jamaica ordered a total of 45 Filters, 20 Thickeners and 26 low pressure pumps of various types and sizes. In Michigan, three magnesia-from-brine plants will add a variety of agitation, filtration and thickening equipment; while a West Coast magnesia-from-sea water producer will employ extensive D-O equipment.

POLYETHYLENE — Our contribution to one of today's most spectacular and rapidly growing fields — polyethylene — is the Merco Pressure Centrifuge, developed specifically for high pressure, high temperature operation. The basic unit was developed, designed and manufactured in record time to keep pace with the expanding industry. First commercial Centrifuges will go on stream early in 1957 separating catalyst from liquid polyethylene.

FLUOSOLIDS SYSTEMS — A large steel producer in the United States finalized plans for a new fine coal washing plant using a two Reactor FluoSolids Coal Drying System designed to handle 600 tons of metallurgical coal per hour. In the non-metallics field, three fluidized Reactors went into operation — two in the Detroit area drying blast furnace slag used in cement manufacture, and the other calcining clay in Scotland. Systems are now under construction to dry and pre-heat oyster shells and to calcine Massachusetts limestone.

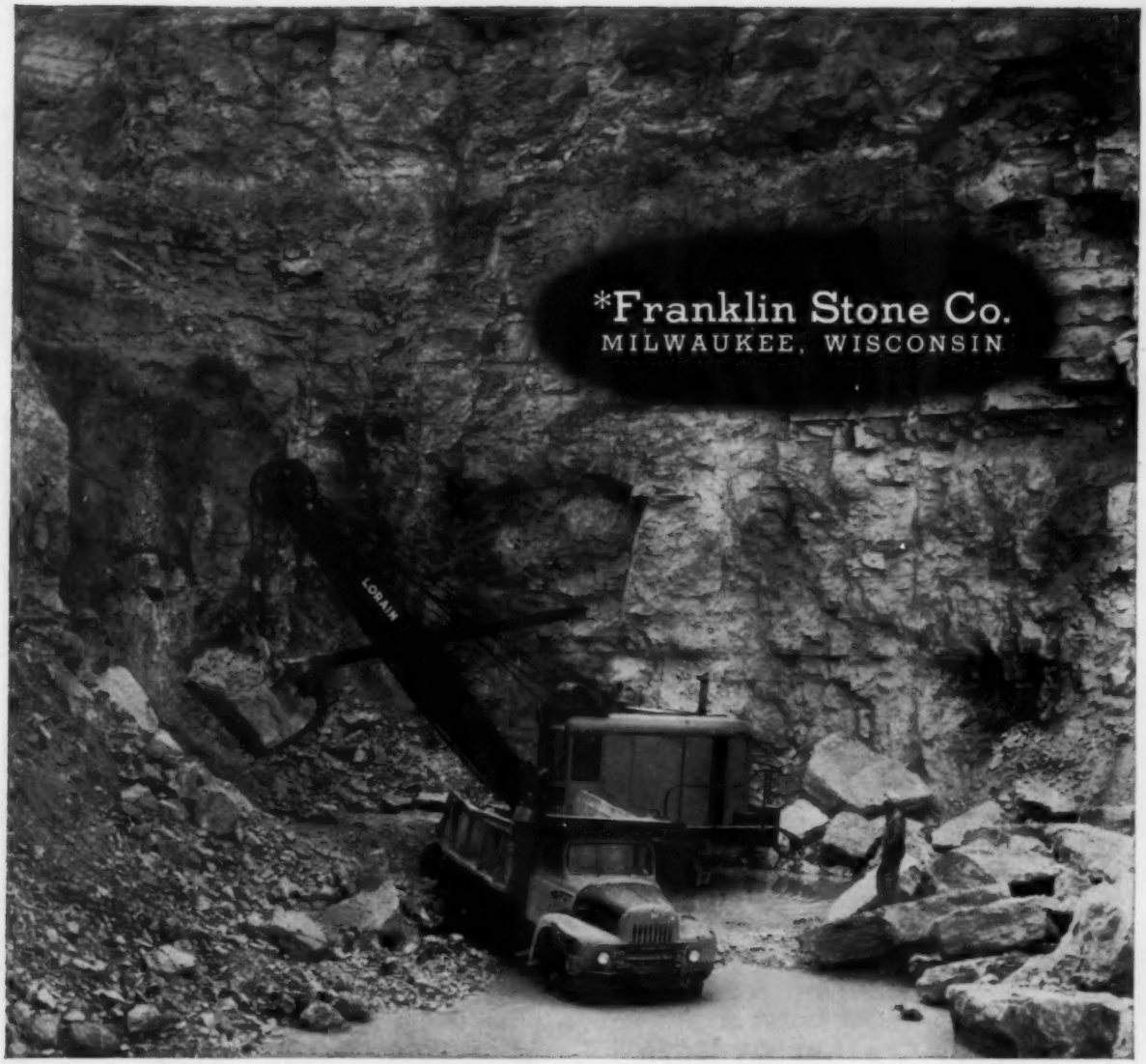
Four new installations in Japan will roast 265 tons of zinc concentrates daily, producing both a readily usable calcine and SO_2 bearing gases for contact sulfuric acid manufacture. During the year two installations in the U. S. and South Africa operated successfully roasting copper for direct electrowinning. And pyrite roasters were ordered for a Canadian uranium mill, Chilean and Nicaraguan copper concentrators, French and Philippine fertilizer plants, and two Scandinavian pulp mills. In all, 21 fluidized Reactors were sold in 1956.

URANIUM — Four new or expanding uranium mills in the United States and Canada will employ a wide variety of types and sizes of Agitators, Thickeners and Classifiers to perform the various leaching, dewatering and classification steps. One of these — a West Coast installation — will also install a d-i system to concentrate and purify uranium bearing solution.

INDUSTRIAL WASTES — D-O equipped treatment plants handling chemical wastes were installed by a German and two British chemical manufacturers. The former installation incorporates the first D-O equipment to be purchased for this purpose in Germany since World War II. Next year two Southern pulp mills will clarify wastes in giant 300 foot Thickeners installed in earthen basins, and a U. S. steel company will recover flue dust in a completely D-O designed installation. Two similar flue dust recovery stations were also ordered from our British subsidiary during the year.

The year's impressive record of sales and technical accomplishment has been made by the hard work of our staff in every corner of the globe. The success of our operations naturally rests wholly with them, despite the importance of the tangible facilities and tools with which we work. In the year now drawing to a close this was again demonstrated, and as the tools and facilities we give them expand and become of better quality, so will our staff be able to produce greater volume and increasing returns.

J. D. Hitch, Jr.
November 20, 1956 *President*



*Licks tough rock with this 2½-yd. LORAIN

This quarry face melts away at the rate of 2000 yds. a day as Franklin Stone's 2½-yd. Lorain shovel loads out the tough rock for hauling to the crusher.

Lorains have always proved themselves in this kind of hard digging. They have built a reputation for their ability to work for years in quarries where digging demands are extreme.

And now, Lorains are better than ever! Latest advancements in 2½-yd. Lorains include many improvements that help operators get even bigger yardage on a steady schedule. Here are a few incorporated in Lorain's newest 2½-yd. shovel—the Lorain-85A. There are 2-lever, "Joy Stick-Air Ease" controls with new air-actuated clutches for easier, faster, simpler "Metered-Air" operation of all turntable operations. All crawler operations are controlled by "Air-Ease" power. There is a "new look" in the streamlined cab that introduces new operator comfort, convenience. The exclusive Lorain "Shear-Ball" mounting eliminates center pin and nut and rollers of all kinds with their attendant wear, adjustment and maintenance. The "Shear-Ball" mounting provides smooth, rock-steady, "Ball-Bearing" swing. There is nothing like it on any other shovel-crane.

You can see the new Lorain-85A at the Chicago Road Show along with many other new Lorain features—don't miss it! Also, check with your Thew-Lorain Distributor for latest news about all other Lorain models.

The Thew Shovel Co., Lorain, Ohio

THEW LORAIN®

Manitowoc 2½ yd. Shovel Loads 22 Tons of Crushed Rock Every 82 Seconds!

Also Feeds Crusher At Rate of 4000 Tons in 10 Hr. Shift

Nelson Bros. Quarry, La Harpe, Kansas, supplied an estimated 400,000 tons of crushed stone for an eight mile section of the Kansas Turnpike near Emporia. All of the rock, both before and after crushing, was handled by Nelson Bros.' 2½-yd. Manitowoc shovel. This unit fed 4000 tons of rock into the crusher every 10 hour shift—and filled hauling units to 22 tons capacity in one minute, 22 seconds. The Manitowoc was also used for stripping top-soil off rock beds and is now working in a 24′ ledge of rock in the quarry.

Boost Your Output

Every Manitowoc is a *powerhouse in the pit!* Call your Manitowoc Distributor now for the complete, profitable story.

"Plenty beefy for quarry work . . ."

"Our Manitowoc is plenty beefy for this quarry work," said Mr. Carl Nelson. "We've got good service from this machine. We like it well enough that we're thinking of another one."

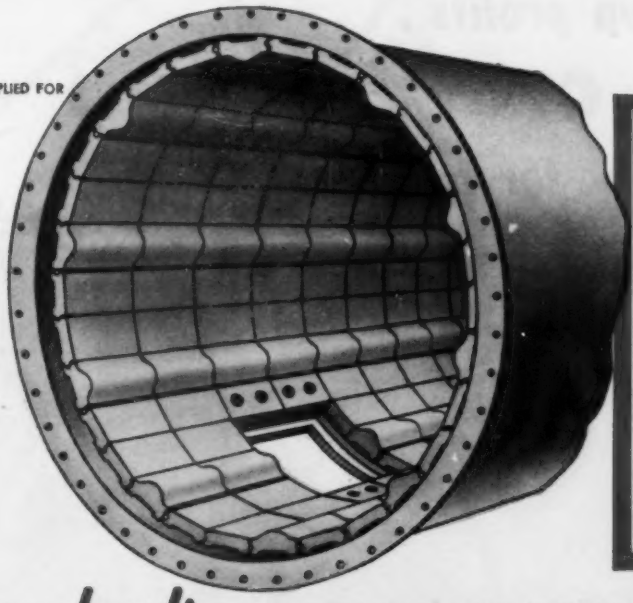
". . . easy to operate . . ."

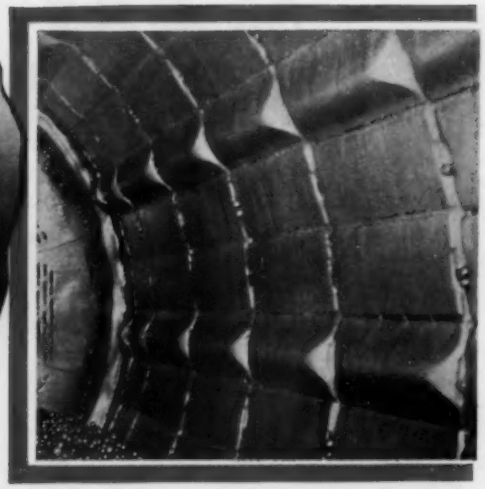
Operator Allen Stokes commented, "I know the shovel can load even faster. It is easy to operate and beats anything I've been on. I like the way it handles when I move it, and its fast swinging speed. We have had no major repairs."

MANITOWOC

SHOVELS 1 - 5½ YD. Speedcrane CRANES 20-100 TON

PATENT APPLIED FOR





Standardize WITH B&W UNIVERSAL LINER PLATES

SAME CASTING FITS ALL MILL SIZES
B&W LINER PLATES RAISE PERFORMANCE, LOWER COSTS

The new B &W Tube Mill Liners have advantages that mean reduced costs in capital, time and labor.

Cost per ton of material ground is reduced, for the practical reasons listed below. Check them—you may find that one, or a combination, of these qualities will solve your existing problems.

- Lower Initial Costs—No pattern and chiller costs —the result of standardization.
- Longer life of liners—Uniform wear will result from better quality control on a mass production casting, utilizing permanent molds. Size is ideal for uniform chill and heat-treatment.
- Longer life for different applications can be realized by a selection of proper materials. This design lends itself to either chilled irons or wear steels.
- Direct labor cost and the "down-time" to install the liners are reduced. Castings are easily handled due to small size and weight. Less fatigue of workers. No cranes needed to handle lightweight liner castings.
- Cost reduced for storage space. Minimum storage space required as small castings "stack" easily. Records simplified with one design of casting interchangeable for all size mills.
- Saves money on liner inventory. One design fits all diameters of mills, permitting standardization. Quicker unloading and storage possible.
- Savings in breakage claims and delays for replacements. Hard brittle irons are frequently broken in shipment when large castings are used. Small castings are rugged and almost impossible to break by handling.
- Savings in determining most efficient wear pattern. Same castings will produce wear profiles consisting of all lifter ribs, all flats or combination of both, including straight or spiralled lifter pattern.

Liners are supplied in two nominal thicknesses, 1½″ and 3″ with 1½″ high lifters. Castings are 6″ wide x 12″ long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions. For additional information on B&W Universal Tube Mill Liner Plates, write The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

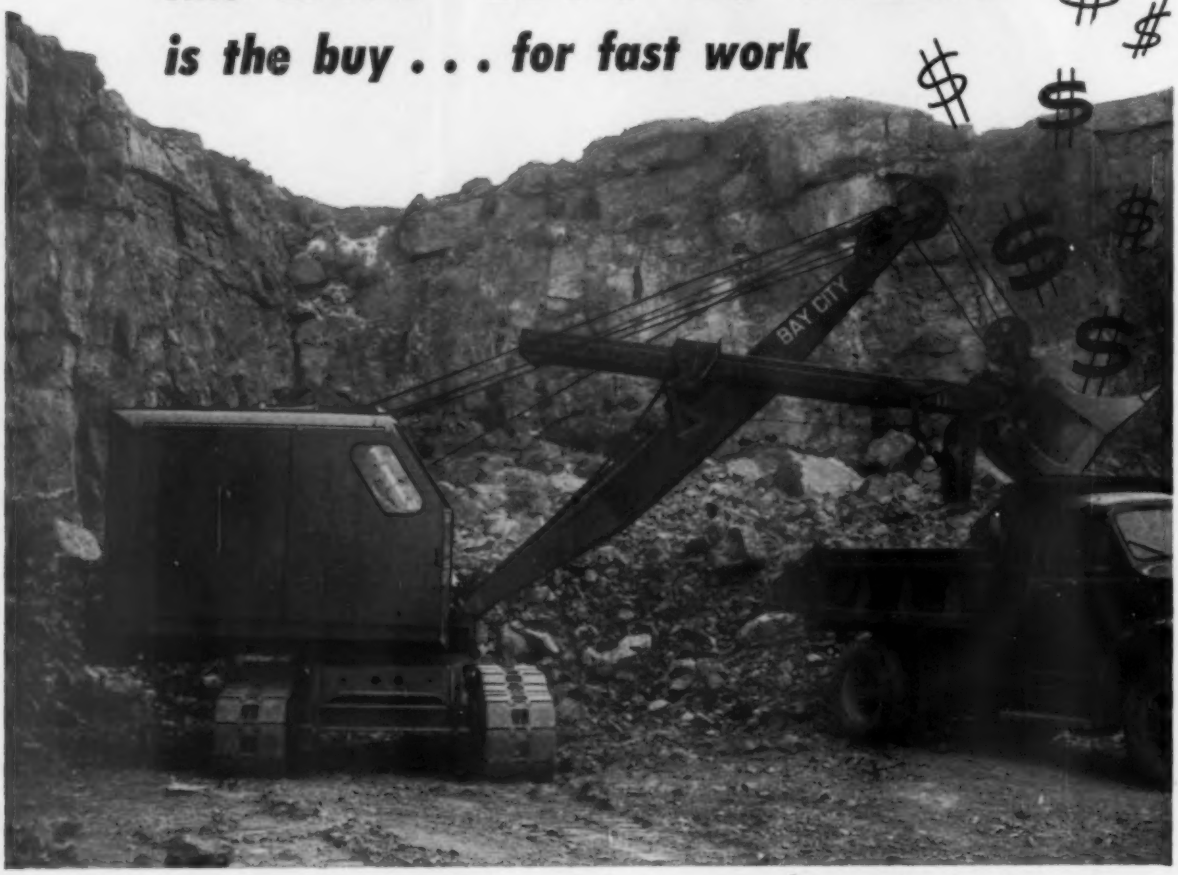
•

BABCOCK & WILCOX

BOILER DIVISION

S-464

how to dig up profits . . .
this BAY CITY ¾ YARD
is the buy . . . for fast work



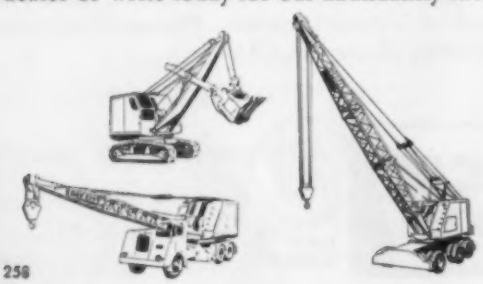
Want performance in a shovel? Then get a BAY CITY ¾ YARD. Its snappy swing, quick, responsive controls, fine balance and powerful engine provide a fast digging cycle. That means dollars to you in the field.

And the rugged, heavy duty construction of this BAY CITY machine means less down time for repairs and lower all-round maintenance costs. More dollar savings to you in the shop.

Fully convertible and equally efficient as a shovel, hoe, dragline or clamshell. Get the complete facts from your nearest BAY CITY dealer or write today for our abundantly illustrated catalog.

Quick Facts About The BAY CITY ¾ YARD

Fully Convertible
Long, Wide Crawlers
Alloy Cast Bases
Tandem Drums
Power Booster Clutches
High Line Speeds
Wide Vision Cab
Worm Boom Hoist

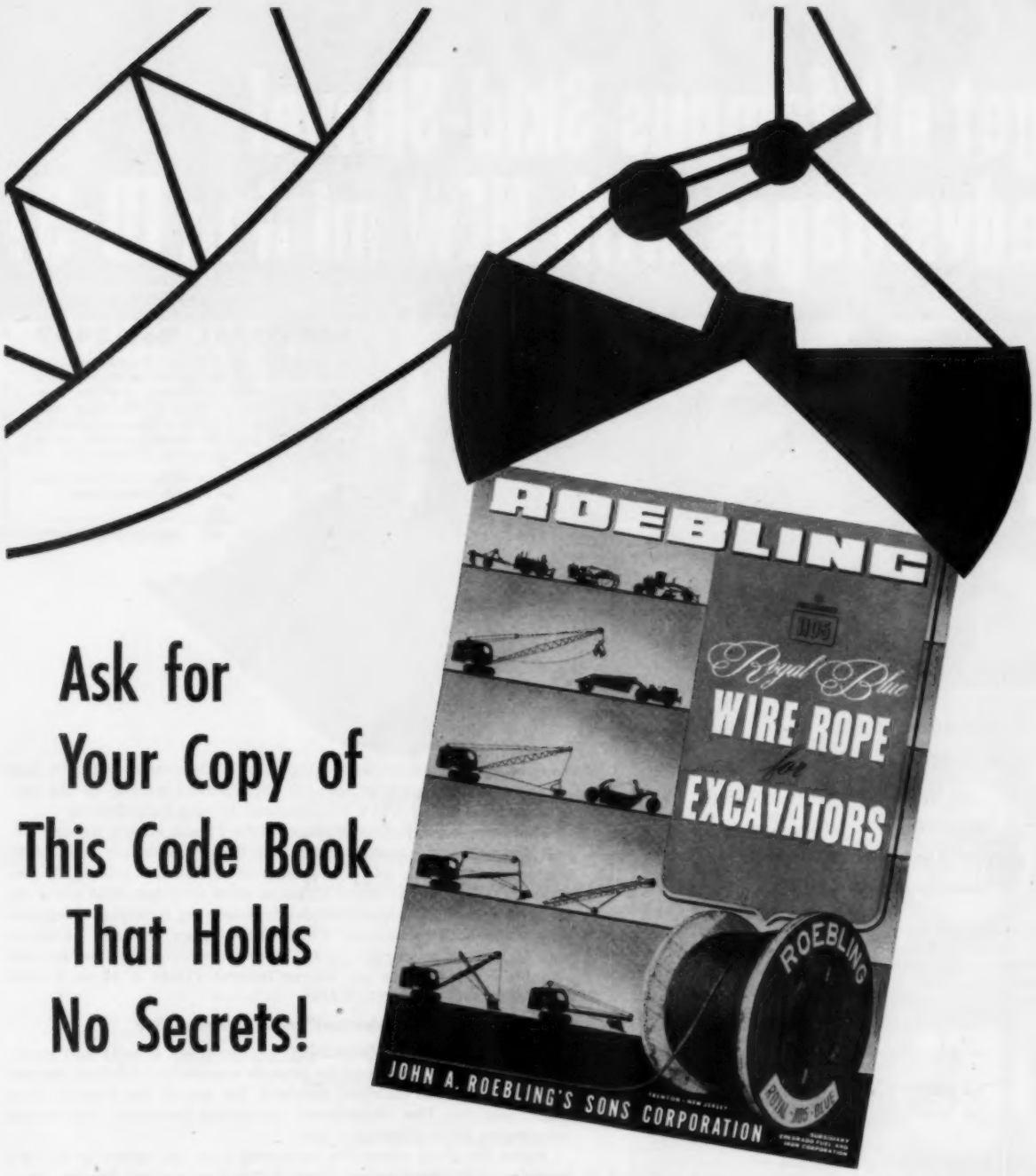


258

BAY CITY SHOVELS INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



Ask for Your Copy of This Code Book That Holds No Secrets!

If you operate excavating equipment, Roebling's new booklet, "Wire Rope for Excavators," is a must. It's chock-full of sound recommendations on where to use Royal Blue Wire Rope—the rope that's built to be stronger than the finest grade previously available.

The easy-to-follow coding system assures that you get the right rope every time. It covers hoist ropes, dragline ropes, ropes for shovels, skimmers, scraper wagons, trench hoes, clamshell cranes, slacklines, derricks, drag scrapers and bulldozers. The recommendations are for the rugged conditions you meet every day.

You'll also find supplementary data on wire rope constructions, diameters, weights and breaking strengths.

There is a copy of this 12-page booklet waiting for you. Communicate with John A. Roebling's Sons Corporation, Trenton 2, New Jersey. Your copy will be sent promptly.

ROEBLING

Branch Offices In Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

NOW...
get all famous Skid-Shovel advantages with NEW mining TD-9!

U. S. BUREAU OF MINES

APPROVAL No. 2409

The components for this new International Drott underground mining tractor were safety-tested and approved at the Bureau of Mines Laboratory, Pittsburgh, Pa. In addition to the built-in exhaust cooling and diffusion system, the Bureau stipulates that for full TD-9 engine hp operation, 9,800 cfm of ventilating air be furnished at the mine face.

These three factors provide more than an adequate safety factor!

6 attachments for unmatched versatility!

Exclusive Drott Four-In-One is a dozer, bucket, clamshell, and scraper, all in one.

95-inch Drott bulldozer blade mounts directly onto Skid-Shovel lift arms. Easy to control!

Drott Bullangledozer blade can be angled to either side and has power tilt from operator's seat!

Rock fork constructed of super-strong alloy steel . . . withstands abrasion of loading hard, heavy minerals.

Third, extra valve of Drott Skid-Shovel controls rear-mounted heavy-duty scarifier.

Low profile, 2-prong grapple with top grab arm loads ties or mine props with full control.

You get exclusive wide work range, low equipment investment, and all other exclusive advantages for underground mining—in the new International Drott TD-9 Four-In-One Mining Skid-Shovel.

This new, big-capacity producer with 71 net engine hp and 24-volt direct electric starting meets U.S. Bureau of Mines new safety standards (Schedule 24) for underground, non-coal mining. It features the new short-coupled, stainless steel scrubber—that cools exhaust to a maximum of 160°F, while dissolving irritating aldehydes with water-bath turbulence. Then Drott design produces an extra-safe 75 to 1 diffusion ratio by fan stream action on the final exhaust —to break up noxious gas concentrations. (Only a 40 to 1 ratio was required!)

"Mine-tunnel" maneuverability

In addition, low, "trolley-clearing" profile (only 6' tall) and standard length of the new machine provide unmatched full-load maneuverability, even in cramped quarters. You get all the famous Drott exclusives, too, like triple-power pry-action break-out, and shock-swallowing Hydro-Spring!

Prove the great versatility, operating ease, and safety of the new underground International Drott TD-9 Four-In-One Mining Skid-Shovel. See your International Drott Distributor for a demonstration.

International Harvester Company, 180 North Michigan Avenue, Chicago 1, Illinois
Drott Manufacturing Corp., 3126 South 27th Street, Milwaukee, 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT

Review and Forecast

Record demands for PIT AND QUARRY materials in 1956 caused the plants in this industry to produce their largest volume in history. Final production figures are certain to reveal that this was the first time that over one billion tons of nonmetallic minerals were produced in a single year.

There are no signs that this pace will slacken in 1957, either. Stimulated by the demands of the new Federal Highway Program, and other construction which will reach a record level, the PIT AND QUARRY industries are certain to be called upon for another record-breaking performance in 1957.

Pit and Quarry reports:

Construction Maintained at Record Pace ..... p. 130
—JAMES G. KOSTKA

1956—10th Consecutive Record Year for Cement Production 138
—WALTER E. TRAUFFER

Aggregate Production Continues to Climb 156
—BUREN C. HEROD

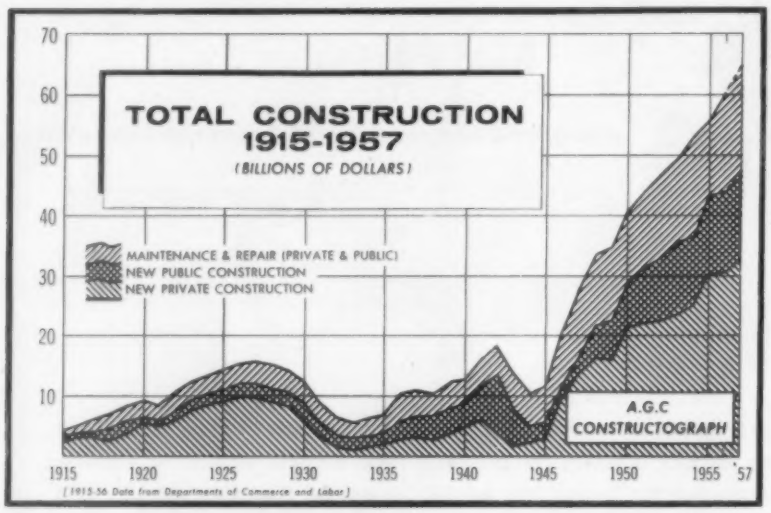
Nonmetallics Maintain Vigorous Activity 164
—BUREN C. HEROD

Special Reports on the Concrete Industries, by ROY L. PECK, are featured in our CONCRETE MANUFACTURER Section for January, 1957.

Federal Highway Program Under Way

Other Construction Maintains Record Pace

By JAMES G. KOSTKA



Everyone predicts that 1957 will be the 12th straight year of record construction.

PACED by a continuing, increased demand for practically all types of construction, 1956 gained the distinction of becoming the 11th straight year to establish a new construction record. This added link to the chain of records came as no surprise, though, because the Departments of Commerce and Labor had predicted back in December, 1955, that 1956 would establish another record. And after comparing the actual 1956 construction volume with the amount predicted by the Departments of Commerce and Labor, we find that their forecast was amazingly accurate. They predicted that 1956 construction would amount to $44,000,000,000. It now looks as though the actual total will be about $44,125,000,000. That's about as close as you can come without hitting the figure right on the head. The private construction prediction of the two departments was slightly high—$30,700,000,000 actual, against the $30,850,000,000 predicted. And their public construction was slightly low—$13,425,000,000 actual, against the $13,150,000,000 predicted. But these two segments of construction tended to offset each other and bring the entire construction total extremely close to the estimate of the Commerce and Labor Departments.

Construction of all types in 1956 showed a combined increase of $2,125,000,000 over 1955. This was a jump of 5 percent. And after analyzing the construction outlook for 1957, the Departments of Commerce and Labor feel this year is destined to become the 12th year in a row to set a construction record. Their prediction is that 1957's total construction will amount to $46,400,000,000, or another increase of 5 percent over the previous year.

Maintenance and repair of all existing facilities is expected to amount to approximately $17,000,000,000,000 in 1957, according to the Associated General Contractors of America. This is in addition to the $1,500,000,000 figure on Additions and Alterations predicted by the Departments of Commerce and Labor for 1957 and should not be confused with it. Combining the estimated construction total of $46,400,00,000 made by the Departments of Commerce and Labor with the $17,000,000,000 in Maintenance and Repair estimated by the General Contractors of America, we find that all construction is expected to amount to a record $63,400,000,000 in 1957.

PRIVATE CONSTRUCTION

New Dwelling Units Home building, excluding non-farm homes, represents the largest single type of construction today. In 1956 it amounted to an impressive total of $13,370,000,000.

There is some difference of opinion about the amount of construction of this type that will take place in 1957. The U. S. Departments of Commerce and Labor feel that it will drop off about 5 percent, to $12,700,000,000. On the other hand, the F. W. Dodge Corporation is more optimistic about residential construction in 1957. Using non-farm dwelling units as a means of measurement, instead of dollars, they predict that 1,125,000 units will be built in 1957, compared to the 1,100,000 built in 1956. Figuring this on a percentage basis, the F. W. Dodge Corporation expects this type of construction to increase about 2.3 percent during 1957. If this is true, it will reverse the downward trend in new residential dwelling units that started in 1956.

Regardless of whether new residential construction goes up, goes down, or remains the same, it will still represent the largest individual construction effort expended in 1957

by accounting for about 32 percent of all of the construction in the United States.

Additions and Alterations Going along with the trend of increased additions and alterations when the market for new dwelling units is on a decline, this group is expected to increase 8 percent in 1957. The dollar volume for this group in 1956 was $1,385,000,000. In 1957 it should rise to about $1,500,000,000. Because it is extremely difficult to check this particular market, there is a great deal of conjecture as to how large the market actually is. One point conceded by most people who have tried to study this market is that it probably is considerably larger than most estimates made.

Non-housekeeping Falling into this category are buildings containing non-housekeeping quarters such as transient hotels, dormitories, clubhouses, tourist courts, and cabins. This type of construction showed a spectacular rise again in 1956, just as it has for the last several years. Comparing 1956 to 1955, this type of construction rose almost 35 percent, making it one of the leading gainers in percent of increase in all types of construction. In 1955 it was responsible for $330,000,000; in 1956 it produced $445,000,000. In 1957 it is expected to account for $500,000,000 in construction—an increase of 12 percent over last year. More travel and a raising standard of living are the factors attributed to the spectacular increase in this type of construction. More people are traveling and seeking places to spend their leisure time. This fact automatically creates a demand for more non-housekeeping construction.

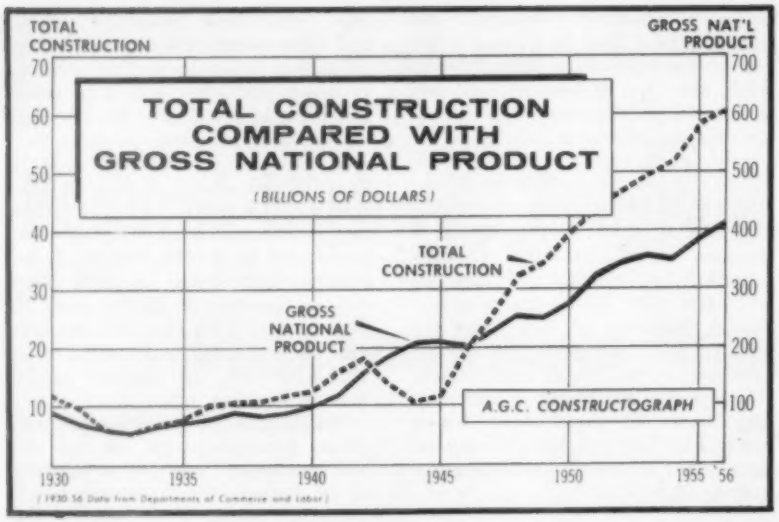
Non-residential Building Combined in this group are industrial buildings, office buildings, warehouses, stores, restaurants, garages, religious buildings, hospital and institutional buildings, educational buildings, social and recreational buildings, and miscellaneous structures such as privately-owned post office buildings, comfort stations, rest rooms, fire stations, zoo buildings, animal hospitals, private garages, greenhouses, aircraft hangars, and a number of other non-residential buildings. As a complete group, non-residential buildings were responsible for $8,800,000,000 of the construction volume in 1956. This was an increase of slightly over 15 percent over 1955. In 1957 the volume for this group is expected to be $9,275,000,000, an increase of 12 percent over last year.

Breaking the large non-residential group into sub-groups, we can determine more clearly how this rise of 12 percent will be accomplished. Industrial construction, which was $3,060,000,000 in 1956, is expected to increase 5 percent to $3,200,000,000 in 1957. Office buildings and warehouse construction, accounting for $1,365,000,000 in 1955, has a predicted volume of $1,500,000,000

NEW CONSTRUCTION IN UNITED STATES, 1954-56 AND OUTLOOK FOR 1957*
(Value, in millions of dollars)

Type of Construction	1954	1955	1956	1957	Percent change 1957 from 1956
Total New Construction	**37,577**	**42,000**	**44,125**	**46,400**	**5**
Private total	25,768	30,000	30,700	31,400	2
Residential building (nonfarm)	13,496	16,345	15,200	14,700	— 3
New dwelling units	12,070	14,765	13,370	12,700	— 5
Additions and alterations	1,130	1,250	1,385	1,500	8
Nonhousekeeping	296	330	445	500	12
Nonresidential building (nonfarm)	6,250	7,630	8,800	9,275	5
Industrial	2,030	2,400	3,060	3,200	5
Commercial	2,212	3,045	3,300	3,300	..
Warehouse, office and loft buildings	958	1,125	1,365	1,500	10
Stores, restaurants and garages	1,254	1,920	1,935	1,800	— 7
Other nonresidential building	2,008	2,185	2,440	2,775	14
Religious	593	740	775	875	13
Educational	529	500	535	550	3
Social and recreational	228	245	270	300	11
Hospital and institutional	337	350	325	400	23
Miscellaneous	321	350	535	650	21
Farm construction	1,560	1,400	1,500	1,550	3
Public utilities	4,341	4,465	5,080	5,750	13
Railroads	353	340	435	450	3
Telephone and telegraph	655	700	970	1,075	11
Other public utilities	3,333	3,425	3,675	4,225	15
Local transit	25	25	25	25	..
Pipelines	300	325	350	375	7
Electric light and power	1,900	1,800	1,900	2,100	11
Gas	1,108	1,275	1,400	1,725	23
All other private	121	160	120	125	4
Public Construction	11,809	12,000	13,425	15,000	12
Residential building	336	250	275	450	64
Nonresidential building	4,641	4,220	4,050	4,500	11
Industrial	1,506	705	425	425	..
Educational	2,134	2,450	2,560	2,850	11
Hospital and insitutional	365	330	305	375	23
Other nonresidential building	636	735	760	850	12
Military facilities	1,030	1,320	1,420	1,525	7
Highways	3,750	4,100	5,100	5,500	8
Sewer and Water	982	1,080	1,290	1,550	20
Miscellaneous public service enterprises	218	280	450	475	6
Conservation and development	704	600	660	800	21
All other public	148	150	180	200	11

*Joint estimates of the U. S. Department of Labor and the U. S. Department of Commerce.



Continuing its climb in importance in our national economy, total construction in 1956 accounted for almost 15 percent of the gross national product.

in 1956—a rise of 10 percent. Stores, restaurants, and garages, it is felt, will be one of the few groups in the entire construction picture that will show a decline in 1957. This group accounted for $1,935,000,000 in 1956 and it is expected to drop 7 percent to $1,800,000,000 in 1957. Overproduction of these facilities during the last several years accounts for the slackened pace in this particular case. Other non-residential construction, consisting of religious, educational, hospital and institutional, social and recreational, and miscellaneous, was responsible for construction worth $2,440,000,000 in 1956 and is expected to climb to $2,775,000,000 in 1957. This represent a substantial increase of 14 percent.

Farm Construction Unlike private residential construction, farm construction is expected to rise during 1957. In 1956 a decline of 4 percent was predicted, but to the surprise of almost everyone, it actually increased about 7 percent. Feeling that this upward trend will continue to hold in 1957, Departments of Commerce and Labor spokesmen predict that farm construction will reach $1,550,000,000, an increase of 3 percent over last year.

Farm construction experienced a steady decline for four consecutive years, but 1956 brought about a reversal of that trend. This fact is attributed to an increase in both farm income and population, which started in 1955. Farm population had been falling off for three or four years prior to 1955.

Public Utility Railroad, telephone, and telegraph, local transit, pipeline, electric light and power, and gas construction is represented by this group. As an entire group, the total construction in 1956 was worth $5,080,000,000. This was an increase of almost 14 percent over the previous year. Predictions indicate that a similar jump in this type of construction will take place in 1957. Current estimates are that public utility construction will amount to $5,750,000,000 during this year, representing an increase of 13 percent over last year.

Analyzing the segments making up this group more closely we find that railroads are expected to account for $450,000,000 in construction, an increase of 3 percent over 1956; telephone and telegraph construction should amount to $1,075,000,000, an increase of 11 percent; and local transit, pipeline, electric light and power, and gas are counted on to account for $4,225,000,000 in construction bringing it just about 15 percent above the 1956 total.

PUBLIC CONSTRUCTION

Every type of public construction is expected to show a marked increase over the previous year. A 12 percent increase for the entire group is forecast for 1957, meaning that this year's construction volume for the combined group will amount to $15,000,000,000. In 1956 it amounted to $13,425,000,000.

Types of construction making up the public utility group are residential, non-residential, industrial, educational, hospital, and institutional, and other non-residential building, military facilities, highway, sewage disposal, water supply, public service, conservation and development, and all other public construction.

Residential Included in this group are converted houses, apartments, and other housekeeping dwellings constructed by state and local housing authorities; dormitories, and nurses' homes. In relation to percent of increase, this group is predicted to show the greatest increase in 1957 over 1956. A whopping 64 percent increase has been forecast for this kind of construction. Comparatively speaking, the dollar increase isn't especially startling because it amounts to only $175,000,000; but when you consider that the 1957 volume has risen from $275,000,000 to $450,000,000 in just one year, the expected 1957 effort commands much more respect.

Non-residential Building Making up this group are industrial, educational, hospital and institutional, and other

Modern architecture and a thin-shell concrete roof give a unique look to the St. Louis, Mo., Airport Terminal Building. Structures of this type are classified as miscellaneous non-residential buildings.

non-residential building construction. The group as a whole will represent a total of $4,500,000,000 in construction, or an increase of 11 percent over the $4,050,000,000 produced by this same group in 1956.

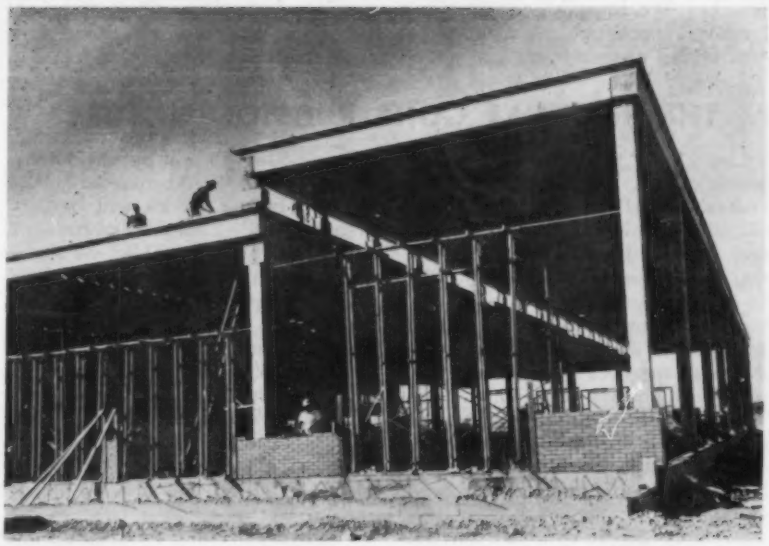
Taken individually, industrial non-residential construction is expected to remain about the same as last year, when it accounted for $425,000,000 in volume. Construction of educational non-residential buildings is predicted to rise 11 percent, to $2,850,000,000.

Hospital and institutional construction is expected to show a substantial increase of 23 percent in 1957 production. This group's construction amounted to $305,000,000 in 1956; and if it increases according to expectations, it should amount to $375,000,000 in 1957. Much of the increased demand for building of this type is due to the movement of people from cities into suburban areas. Now that many suburban areas have grown to a substantial size, their residents want hospital facilities close at hand instead of in the city, many miles away. This has caused a demand for a number of new hospitals in outlying areas.

Other non-residential construction not covered in a specific group in this section is favored to show a 12 percent rise in 1957. This would boost this group's volume to a figure of $850,000,000 by the end of this year. This type of construction has shown a very steady increase during the last four years and appears certain to keep climbing in 1957.

Military Facilities Included in this group is all construction at federal military establishments, except industrial buildings. It includes administration and training buildings, warehouses, mess halls, recreation centers, chapels, powerhouses, post and general hospitals, heating plants, commissaries, laboratories, rifle ranges, airfields, roads, sewer systems and water-supply facilities, dwellings, piers, docks, fleet facilities, radio facilities, etc. According to current estimates, 1957 should account for $1,525,000,000 worth of this type of construction. If this figure is reached, it will represent the highest peacetime expenditure this group has ever attained. Only the war years of 1918, 1942, and 1943 were higher.

Sewage Disposal All sewage systems, sewage disposal plants, incinerators, and drainage ditches other than those connected with highway or conservation work are a part of this group. Construction of these facilities is expected to rise sharply in 1957, bringing this year 23 percent above 1956. The increased volume forecast for this type of construction in 1956 is still far short of actual needs.



Sperry-Rand Corporation's new engineering laboratory in Salt Lake City, Utah, provides a good example of the use of channel-sectioned prestressed concrete slabs for roof construction. Prestressed concrete is gaining rapid recognition in today's construction.

Water Supply This group is comprised of all water supply systems; filtration and treatment plants; reservoirs for municipal water-supply; and water towers, aqueducts, and other transmission and distribution facilities. Predicted construction for this group will amount to about $675,000,000 in 1957, topping the 1956 figure by 16 percent. As in the case of sewage disposal facilities, this type of construction is badly needed, and it will be far behind actual requirements for a number of years, even with increased construction.

Public Service Enterprises Construction included in this classification represents a broad group, consisting of publicly-owned electric light and power plants, gas facilities, central heating plants, local transit systems and other facilities except water-supply and sewage disposal; water front development, including dock, piers, harbor work, sea walls, jetties, barge terminals; runways, roads, aprons, grading and drainage, radio and signal towers, lighting, and all construction work at airports except hangers and administration, terminal, and other buildings. Only a slight increase of 6 percent is anticipated in this kind of construction. This will bring the 1957 total to the $475,000,000 mark.

Conservation and Development Construction coming under this group includes all that pertaining to reclamation, river, harbor, flood-control, and soil conservation projects; dams, reservoirs, and pumping stations; power plants; tunnels; installation of generating equipment; access roads; towers; transmission lines and telephone systems; relocation of roads and railroads; dredging and pile driving; levees and revetments; dwelling and office building; warehouses, garages, sewer system and water treatment plants, etc. Because there has been a growing need and an increasing backlog for projects of this type, construction in this group should reach the $800,000,000 level in 1957—an increase of 21 percent over the previous year.

All Other Public Making up this final group is all miscellaneous federal construction work not elsewhere classified. This is a relatively small but growing group. In 1956 it was responsible for $180,000,000 worth of construction. In 1957 construction of type is expected to reach the $200,000,000-mark, up 11 percent.

Because the federal highway program is of considerable interest to most of our readers, we have decided to give it full and separate coverage in this chapter on con-

struction. We hope it will provide a clearer conception of the provisions of this program and the manner in which they will be carried out from now until the time the program has been completed.

THE HIGHWAY CONSTRUCTION PICTURE

Last June 29 President Eisenhower affixed his signature to the Federal-Aid Highway Act of 1956, officially known as H. R. 10660, and gained the distinction of setting into motion the largest public works program undertaken in the history of this or any other nation. Millions of Americans have been aware of the need for new and improved highways throughout the United States, but very few actually realized the magnitude of the legislation that was passed. It will not be until this program has been completed by the end of 1969 that most people will be able to grasp some idea of how gigantic this single undertaking actually is. Those who travel extensively by automobile will be much more aware of what has been accomplished than those who do comparatively little traveling on our national highways.

Very little time was wasted in getting the program started after the Federal-Aid Highway Act was signed on June 29, 1956. The first ground was broken under this new program near St. Charles, Mo., on August 10 on Route 40. Just four days later Massachusetts awarded its first contract under the new program. Several weeks later Ohio started to weld a new link in its chain of interstate highways by breaking ground on another interstate highway project.

Getting down to dollars and cents, the American Federal-Aid Highway Act of 1956 will cost approximately $50,000,000,000. About $37,600,000,000 of this amout will be furnished by the Federal Government and about $13,000,000,000 by state-matching funds. This money will be raised by use taxes which we shall be paying into the Federal-Aid Highway program during the next 13 years or more.

An analysis of the Federal-Aid Highway Act of 1956 reveals that it can be divided into four sections. Three of these designate work to be done; the fourth provides the money to pay for the work.

The first section dealing with work to be done under this new legislation increases regular federal aid to the 700,000 miles network of primary and secondary roads throughout the country by about 20 percent over the next three years. The stepped-up federal allotment, coupled with matching money by the states during the period 1957 through 1959, will amount to about $5,000,000,000.

The second section dealing with work to be done provides increased federal funds for national park and forest and Indian-reservation roads. These particular projects receive no state funds. Federal expenditures for these roads will total $448,000,000 during the next three years.

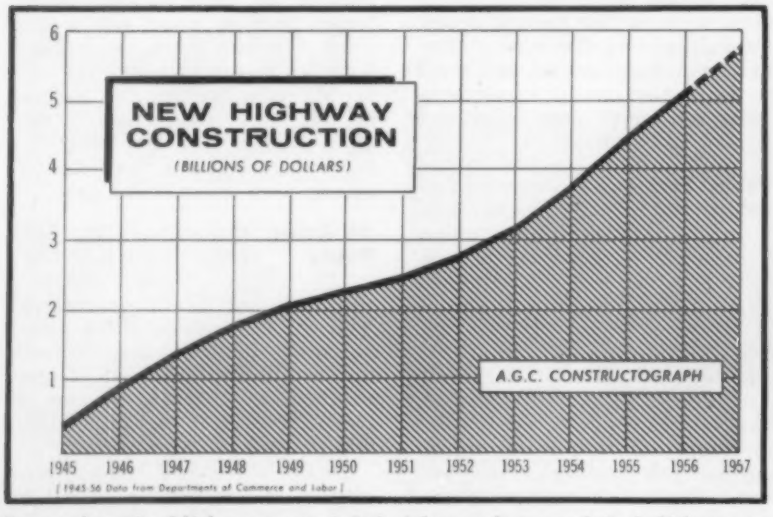
The third and final section dealing with work to be done is the big one. This section specifies 41,000 miles of our principal highways as the "National System of Interstate and Defense Highways" and directs that this system be completed to certain highway standards by the end of 1969. Federal-aid funds of $25,000,000,000 are allocated to this Interstate System development, to be matched by state funds of $2,742,000,000 at a 90-10 ratio.

Combining the federal and state allocations that are certain to be made during the next 13 years, we arrive at a total expenditure of $32,921,000,000. This is considerably more than double the current rate of spending for highway construction. Total probable federal-state allocations for the same period, including future appropriations for the group in the first section, will be about $50,000,000,000. These totals do not include highway maintenance costs nor the cost of building and maintaining non-federal roads.

Now that we have established the cost of this highway program, let us see what effect it will have upon pit-and-quarry operations. During the 13-year period, from 1957-1969, approximately 1,399,000,000 barrels of cement, 127,800,000 tons of bituminour material, and 9,710,000,000 tons of sand and gravel and crushed stone will be consumed in this highway construction program.

Each year during the peak years of the program, the total amount of sand and gravel and crushed stone used to supply the needs of the Federal Aid Highway Act of 1956 will be almost as large as all the crushed stone and sand and gravel produced during 1955, which was a record production year. Most of the sand and gravel and crushed stone production in 1955 went into construction other than highways, such as: residential, nonresidential, farm, public, and public utility, plus numerous industrial and miscellaneous uses. It is felt that these other forms of construction and industrial uses will consume sand and gravel and crushed stone in larger quantities, too, during the next 13 years; therefore, it is easy to see that the pit-and-quarry industry will be called upon to exert a tremendous effort to keep pace with the needs of the highway program, plus all other construction and industrial needs.

The writer of a recent article on the federal-highway gave a striking illustration of the amount of aggregates that will be needed during the next 13 years. He said that if the aggregate to be used as a base for the roads constructed under the new program were to be dumped in coni-



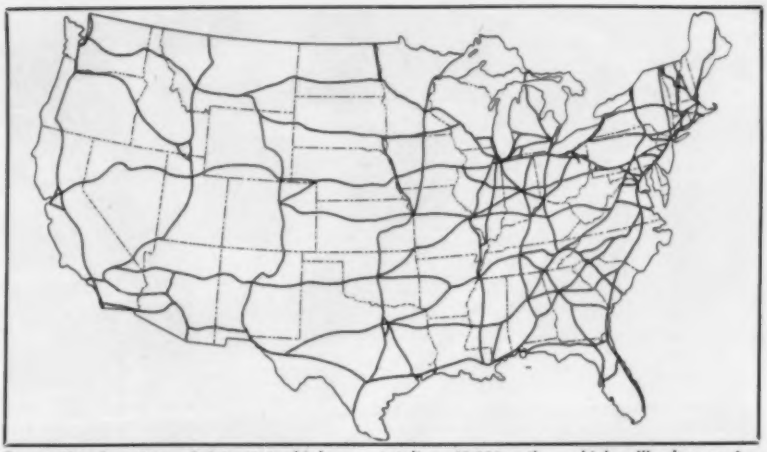
Because the national highway program is in its infancy, only a normal rise in highway construction is predicted for 1957. As this program gets into full swing, more spectacular increases will occur.

cal piles, there would be 500 piles, each four city blocks square and rising to the height of a 40-story building. No matter how you stack it, that's a lot of aggregate!

Since sand and gravel, crushed stone, cement, and bituminous material are all vitally necessary to road construction there couldn't be any modern highways without them, and pit-and-quarry plants all over the nation are therefore assuming leading roles in the initial step of this gigantic construction program.

This leads us to the next logical question: What sort of highways will we receive for the money spent and the material consumed? Specifications indicate that the right of way will be broad—150 to 300 ft. wide—depending upon the terrain, the type of country, and the number of lanes involved. This Interstate System of roads will be built to accommodate estimated traffic needs existing in 1975. Another part of the construction and planning is a provision for expansion after that date, if necessary, to avoid the possibility of the roads becoming obsolete, due to congestion, after a short span of years.

The minimum width of traffic lanes on these highways will be 12 ft., and all-weather shoulders will be from 6 to 10 ft. wide. The dividing (middle) strips of the multi-lane sections of the system will be at least 36 ft. wide in rural areas and no less than 4 ft. wide in built-up urban areas. Each state will determine the type of surfacing that will be used; but regardless of the type, it will have to conform to the highest standards of highway construction.



Our national system of interstate highways, totaling 40,000 miles, which will play an important role in determining the location of highways built under the Federal-Aid Highway Act of 1956.

A combined group of the 48 state highway departments and the Federal Bureau of Public Roads are the planners of this new road system. Their current estimates are that about 28,000 miles of the new system will have four lanes—two in each direction, with a dividing middle strip. Between 5,000 and 6,000 miles of the network will be wider than four lanes. Some 7,000 miles of the Interstate System's 40,000 miles of highway will be two-lane, without a middle strip. These two-lane sections will occur in thinly populated rural areas where the traffic flow is expected to be less than 5,000 vehicles a day in 1975. But it is quite conceivable that some of these proposed two-lane roads will actually become four-lane roads as new traffic flow estimates are made during the course of this program.

Portions of the Interstate System built within metropolitan areas will be known as urban expressways. These particular sections of four- to eight-lane highways are designed for a traffic flow at the minimum of 50 m.p.h. These expressways will eliminate obstacles usually found in urban areas, such as grade crossings, traffic lights, and intersections. Their main objective will be to move large volumes of traffic either through a city or around its outskirts at a relatively high rate of speed. This is why some of these roads already in operation are known as "freeways." The vehicles they carry can travel fairly fast, free of the hindrance usually encountered in urban areas.

The existing 40,000 miles of actual, functioning roads that make up our present Interstate System will act as a master plan for the general location of the new highways. Planning engineers look upon the present routes as traffic corridors; roads built under the new program will follow these corridors, although not necessarily in the same location as the existing roads. This procedure is expected to save a considerable amount of valuable time. It helps reduce production costs, too.

Deciding just where the road will be built will be dependent upon the cost of acquiring sufficient right of way along the path of the existing road. Where the borders of the present roads are developed, the new interstate highways will generally be located to one side of, anywhere

Dating the first Interstate System pavement built with the $25,000,000,000 13-year highway program funds: John M. Griffth, materials engineer, Kansas State Highway Department; O. P. Shallenberger, construction engineer, U.S. Bureau of Public Roads; John Beuerlein, Koss Construction Company; Ivan Wassberg, State Highway Commissioner, First Division, Kansas State Highway Department; L. H. Vincent, division engineer, First Division, Kansas State Highway Department.

The completed New York State Thruway provides a good illustration of modern highway construction. Note the safety features provided by overpasses, large exits and approaches, and a center section dividing the opposite lanes of traffic.

from a few yards to several miles away from, and paralleling the existing route. In some cases the existing road will serve as a service road for the new highway.

There has been no final decision on just how much of the new system will follow along the same route as the old roads. As of August 1, 1956, final location approval had been given to 13,000 of the 40,000 miles of the new system. Of these 13,000-miles of road, 62 percent is to be relocated and 38 percent is to be built along the path of the old roads. However, this ratio can not be used as a criterion for estimating the remaining 27,000 miles of road. Most of the 13,000 miles of road already approved is in rural areas, where costly right-of-way purchases were not involved. The current guess is that at least 75 percent of the entire new Federal Highway System will be new relocated highway.

Tremors heralding the beginning of this colossal road building program began to be felt when the first toll turnpikes went into construction. Almost everyone followed the construction of the Pennsylvania turnpike with a considerable amount of interest. It was felt that this was the beginning of a new era in road travel, and people were anxious to see it go into full operation, so that it could prove its worth in the most convincing manner. Finally its complete length was opened, and motorists found that this road was actually better than they had hoped. They now had a highway that reduced driving hazards to the minimum, one that was so constructed that vehicles could move at reasonably high rates of speed for great distances. That was just a few years ago. Today there are 1,500 miles of operating toll roads on the Interstate System, and 1,100 more miles are under construction or being financed.

Under the provisions of The Federal-Aid Highway Act of 1956, toll roads that now form a part of the Interstate System and meet the engineering standards of the program —and most of them do—and for which there is an alternate free highway, will become a part of the system and, for the present, remain toll roads. Policy of what to do about these toll roads will be determined in January, 1958, by Congress.

Between now and that time the Secretary of Commerce, through the Bureau of Public Roads and the various state highway departments, is going to study the toll road situation and report back to Congress. Right now it seems reasonable to assume that some arrangement will be worked out to the satisfaction of the bondholders, permitting some of the toll roads to be opened to free travel. An arrangement of this type seems likely in Illinois, Indiana, Kansas, Massachusets, New York, Ohio, Oklahoma, Pennsylvania, and possibly a few more states. But there still remains an unsolved problem of roads, bridges, and tunnels that do not revert to state ownership when the bond-holders have been repaid. This problem will have to be settled eventually, and it is quite possible it will run into a considerable amount of litigation before the matter is settled.

Estimated Material Requirements for the Expanded Highway Construction Program

Year	Units	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	Total 1957-1969
Cement[1]	Million bbl.	61.6	74.0	94.5	102.9	107.4	110.5	110.8	111.2	111.5	113.3	113.6	112.6	110.1	103.6	97.0	1,399.0
Bituminous Material	Million tons	5.85	7.15	8.73	9.49	9.90	10.18	10.18	10.18	10.18	10.18	10.18	10.18	10.18	9.34	8.77	127.67
Total Aggregates[2]	Million tons	403	544	664	722	753	774	774	774	775	774	774	774	774	710	668	9,710
Concrete Culvert Pipe	Million tons	2.64	2.89	3.29	3.57	3.72	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.51	3.30	48.03

[1]Does not include cement in concrete culvert pipe.
[2]Does not include aggregates in concrete culvert pipe.

Prior to the passing of the Federal-Aid Highway Act of 1956 the American Road Builders' Association organized four permanent and separate task forces to study the needs of the road program: (1) Planning and Design, (2) Materials and Supplies, (3) Construction, and (4) Construction Machinery and Equipment. Each of these task forces made an intensive examination of the phase of road construction assigned to it. On March 1, 1956, the president of the A. R. B. A. and the chairmen of the task forces appeared before the House Committee, at which time briefs of the current reports were presented and arrangements were made to place in the record complete texts of these reports.

Stated briefly, the task force reports revealed that the burden of this tremendous roadbuilding operation could be taken in stride by both the raw material producers and the contractors responsible for actually building the road. Plants producing sand and gravel, cement, crushed stone, and bituminous materials would have to be expanded, and in many cases new plants would have to be built; but there was a feeling of certainty that this growth would take place without any complications. Cement production in certain sections of the country was of primary concern, but new plants under construction and plants being expanded, plus those planned to be built or expanded in the near future, assure an adequate supply of cement. Aggregate supplies were found to be more than adequate in all sections of the country.

Considerable anxiety was shown concerning the understaffed state highway departments. Civil engineers are vitally necessary to modern highway construction, and an insufficient number of these men could slow down this program considerably. Fortunately, it was felt that the potential for an increase in productivity by the existing staffs would be possible by the use of new methods and equipment.

At this point it is logical to ask, "Who is going to pay for this $50,000,000,000 road building program?" The answer is simple—"We are." The average automobile owner pays about $91 a year in taxes and license fees, the money which goes to pay for the roads over which he drives his car.

The federal highway program increases our annual tax expenditure an average of $7.64. This seems to be a relatively insignificant amount for the pleasure and safety we will derive from the new highways, to say nothing of the gas and oil consumption and general wear and tear on our cars that will be saved by driving on smooth, uncongested roads.

There is an undercurrent of feeling that the Federal-Aid Highway Act is just the beginning of a highway program that will eventually expand beyond all expectations. American people have become tired of driving on poor and congested roads. Now that they have taken a large first step toward rectifying this situation, further steps are certain to follow.

F. J. Lloyd Jr. Appointed To Vice-President's Post By Dravo Corporation

F. J. Lloyd Jr. was recently elected a vice-president of the Dravo Corporation, Pittsburgh, Pa. Mr. Lloyd is a director of the corporation and general manager of its Keystone Division. He began his career with Dravo in 1923 after being graduated from Lehigh University, where he obtained his engineering degree. He has served in various engineering, supervisory, and executive capacities, becoming general manager of the Keystone Division in February, 1956.

F. J. Lloyd Jr.

Mr. Lloyd is a director and member of the executive committee of the Pittsburgh Coal Exchange and serves on the board of directors of the Ready-Mixed Concrete Association of Metropolitan Pittsburgh.

Celotex Buys Des Plaines Site To Expand Research Facilities

The Celotex Corporation, Chicago, has acquired 12 acres of land and buildings having 60,000 sq. ft. of floor space in Des Plaines, Ill., as a major step in the expansion of its research activities. The Des Plaines center is to become the main center of research, and existing facilities in other parts of the country will be maintained.

Celotex took possession of the property early in December.

G. & W. H. Corson Subsidiary To Distribute New Road Base

G. & W. H. Corson, Inc., has announced the formation of a wholly-owned subsidiary, the Poz-O-Pac Company of America, to distribute a newly-patented road base.

Poz-O-Pac was developed several years ago in the laboratories of Corson, and is said to be capable of withstanding heavy traffic and preventing cracking and sagging of road surfaces due to severe climate conditions. The base is composed of pozzolanic material, portland cement, and clay.

McQuatters, Prestridge Heading Union Gypsum Co. In Staff Reorganization

In a recent reorganization of officers and staff of the Union Gypsum Company, Phoenix, Ariz., Henry C. McQuatters was named president and general manager. Other newly-elected officers include M. R. Prestridge, chairman of the board of directors; Carlton M. Rogers, vice-president; Leo B. Hakes, vice-president in charge of operations; Ray L. Moore, secretary-treasurer; and Robert Shorthouse, assistant secretary-treasurer and office manager. Richard A. Gruner has been named sales manager and Archie Lee quarry manager.

Mr. McQuatters formerly served Union Gypsum as its attorney. For many years he was general counsel and a member of the executive committee for the Southwest Lumber Mills Inc., Phoenix, at its Flagstaff headquarters, and will remain on its board of directors.

The Canada Cement Company, Ltd., Montreal, Que., is reported to be considering the construction of a multimillion-dollar plant at Nordegg, Alta. The town has been nearly deserted since the Brazeau Collieres, Ltd., closed down its coal mining operation there in 1955. More than 10,000,000 tons of coal were produced at the mine from 1914 to 1955.

Review and Forecast

Cement

1956 Tenth Consecutive Record Year

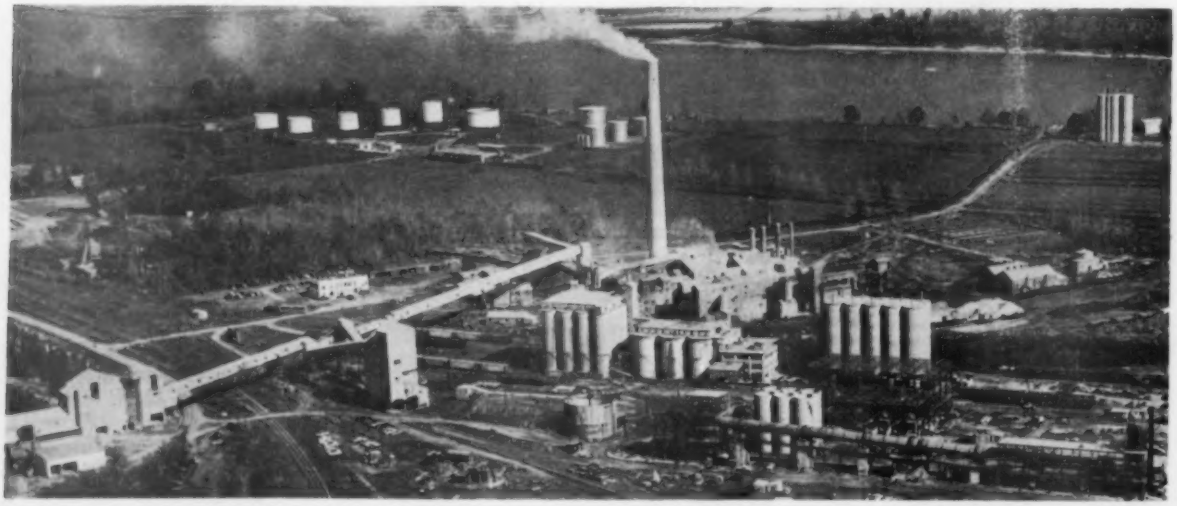
Production, shipments, value reach new levels— Capacity growing faster than demand

By WALTER E. TRAUFFER

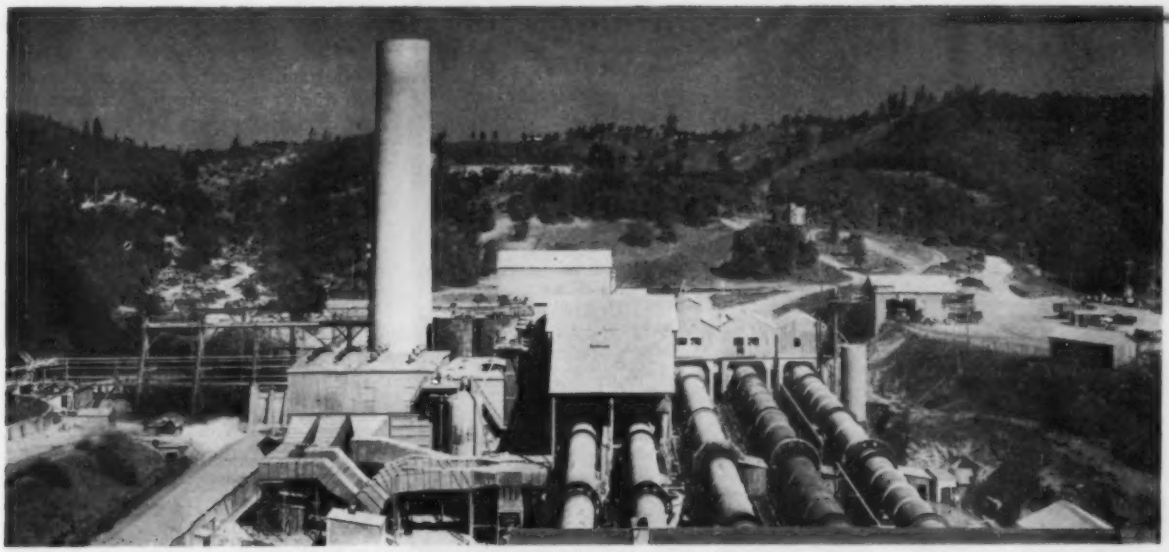
THE portland cement industry in 1956, for the tenth successive year, set new all-time records in production, shipments and value, but this time by a smaller margin than in 1955. Official government figures are now available only for the first 10 months of the year but, with conservative estimates for the last two months, we believe the following totals for the year to be fairly accurate. We estimate that production in 1956 was about 318,000,000 bbl., shipments apparently totaled about 310,000,000 bbl., and value of shipments is estimated at about $940,000,000.

This was an increase of about 7 percent in production, 6 percent in shipments and 10 percent in value of shipments over the 1955 record totals of 296,829,000 bbl., 292,698,000 bbl. and $836,779,000, respectively. This compares to increases of 9, 6, and 10 percent, respectively, a year ago. The important development, of course, is that the industry's capacity to produce in 1956 increased more rapidly than did production or shipments, with the result that fewer shortages were reported than in any other recent year. Producers in general predict that there will be no cement shortages in 1957, although a few feel that there is a possibility of some brief and minor shortages in areas where cement producing capacity has remained relatively unchanged. Some excess of capacity in adjoining areas is expected to quickly take care of these. There is some concern over possible labor troubles which might seriously affect the supply situation in some areas in 1957.

The shipments of cement through October (10 months) of 1956 totaled 268,242,000 bbl.—2,080,000 bbl., or 6 percent, more than the production of 266,162,000 bbl. for the same period. Stocks on hand at the end of October 1956 were 12,996,000 bbl.—48 percent more than a year before. The lowest point in stocks is usually reached in October and it appears now that this will be the highest low in several years. In 1955 stocks at that time were 8,073,000 bbl. and the record low in 1948 was 5,668,000 bbl. There is every indication also that the industry will



In the foreground is the new 1,250,000-bbl. plant being built by Marquette Cement Mfg. Co. alongside existing plant at Cape Girardeau, Mo.



Calaveras Cement Company's new fifth kiln is shown at extreme right. It is 360 feet long, and has a diameter of 11 feet 3 inches. The new kiln brings the company's total production capacity to 4,500,000 barrels of cement per year.

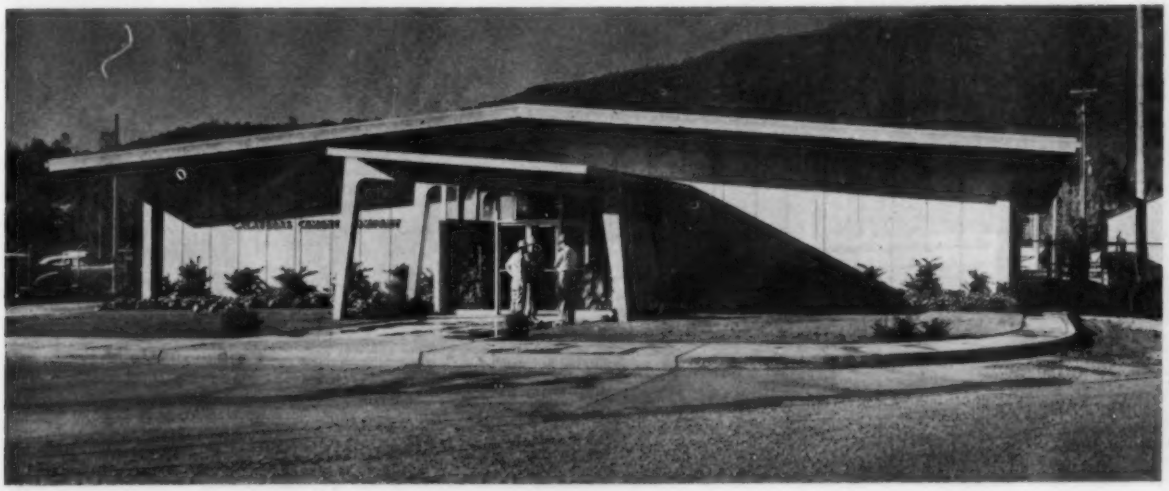
enter the 1957 heavy construction season with its silos full for the first time in many years. Several plants have already been shut down because of full silos and others are scheduled to do so soon, most of them for short periods.

During 1956 the cement industry again operated at a very high percentage of its rated capacity, but apparently not quite at the productive level of the last few years. Government figures show that the industry's productive capacity at the end of 1955 was 317,396,000 bbl. and, with production at 296,829,000 bbl., this came to 93 percent of year-end capacity. Our estimates indicate an increase in capacity in 1956 of at least 27,500,000 bbl. annually for a total of about 345,000,000 bbl. at the end of the year. With an estimated production of about 318,000,000 bbl. in 1956 this would indicate that about 92 percent of year-end capacity was utilized. The actual increase in capacity expected in 1957 is about 30,000,000 bbl., for a total capacity at year end of about 375,000,000 bbl. annually.

The big news in the industry a year ago was the huge expansion program which got under way late in 1955 and which has continued to grow during 1956. During that period hardly a week went by without announcement of plans for at least one important plant expansion or new plant. This resulted in six new plants and 36 important expansion programs completed in 1956 for a total of at least 35,000,000 bbl. of capacity. Present indications are that at least 10 new plants and 26 important expansion programs will be completed in 1957 for a total of at least 49,000,000 bbl. of capacity.

It is impossible to make anything but an educated guess as to the demand for the cement in the year ahead, but all indications point to another substantial increase. All sources of such information, including government bureaus, contractors, associations, construction associations and cement producers, agree that 1957 will see another record

Tilt-up construction and precast arches were used by Calaveras Cement Company in building a new administration building and shop buildings at its San Andreas, Calif., plant. The administration building, shown above, houses a large laboratory and engineering offices in addition to providing quarters for administrative personnel.



This photo, taken late in November, shows the progess being made on Permanente's new 2,500,000-bbl. plant at Cushenberry, Calif. Operation is scheduled for early in 1957.

year of construction. The new highway program is expected to be an important factor, although it will not get well under way until 1958. Highway construction volume is expected to be up about 8 percent in 1957 and all construction about 5 percent. In earlier years the demand for cement increased about the same as construction so at least a 5 percent increase in demand seems to be indicated in 1957.

ATTITUDE OF PRODUCERS

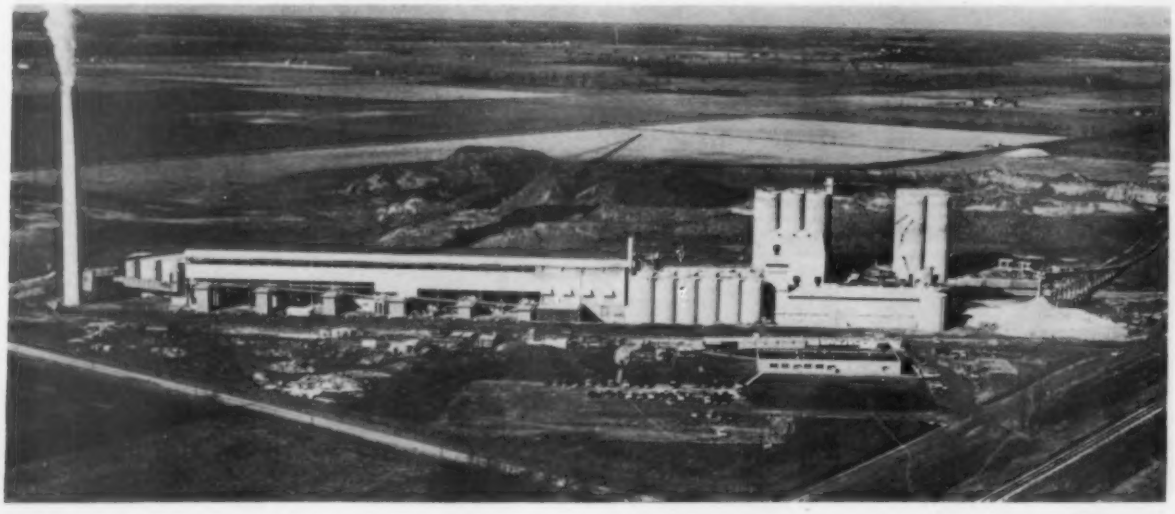
The vast program of expansion which got under way more than a year ago in the cement industry was sparked by the growing conviction of producers that this country was no longer in a boom period, but that it had reached a new and higher plateau of growth of our economy. Both production and storage capacity, they feel, should be sufficient to carry the industry through the season of peak demand without shortages. Opinions now expressed by these producers continue to reflect confidence in the long-term growth of our economy but many feel that things are leveling off temporarily, to be followed by another upward climb.

The letters received from cement producers operating in all parts of the country express the general feeling that the present expansion is fulfilling the industry's obligation to its customers, of insuring them all the cement they may need. Most of the producers feel that by early 1957 there will be ample capacity to take care of any possible demands during that year. Many of them are waiting to see what will develop in the coming year, especially with respect to the highway program, before committing themselves to any further expansions beyond those now under way. They retain, however, the conviction that capacity must from now on be kept well ahead of demands, and they are ready to go ahead with new additions whenever it becomes apparent that they will be needed.

According to a large producer with plants throughout the country: "Both the near term and long term outlook for the cement industry are good. Economists are almost unanimous in forecasting another increase in expenditures for construction in 1957 due, in part, to increased physical volume. We are expecting a continuing strong demand for cement next year and estimate an increase in shipments between five and ten percent over this year. Of course, productive capacity is steadily increasing and cement should be in better supply than in past years.

"The largest demands for cement in 1957 will come from the highway program and from the ready mixed concrete industry. New and expanded uses for cement such as pre-

The new 1,250,000-bbl. plant of Consolidated Cement Corporation at Paulding, Ohio, which went into operation late in 1956. Work has already begun on an addition that will double its capacity late this year.



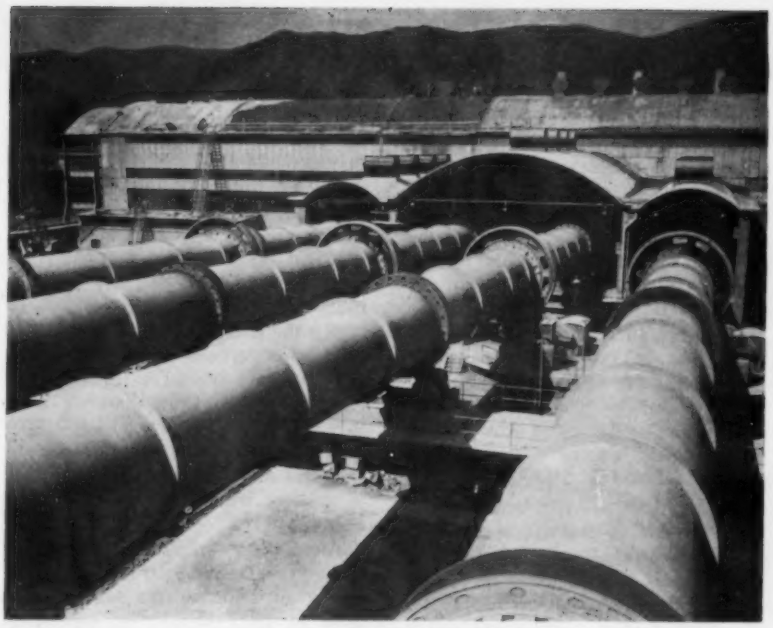
stressed concrete, thin shell construction, tilt-up construction, soil cement paving and others will all contribute substantially to a bright future for the cement industry."

A smaller Eastern producer says: "Our company's shipments for 1956 exceeded those of 1955, and although it looks as if production has caught up with demand—at least for the time being—we anticipate continued good business. Even if the demand for new homes drops slightly, the number undertaken should still be tremendous in comparison with earlier post-war standards. And the construction of new schools, hospitals, air fields and roads will, we believe, be carried on at unprecedented levels for years to come. The rapid rise in our population by itself will make this kind of construction imperative, in our opinion. We think the demand for cement is tied in with the growth of the country and therefore should continue at high levels indefinitely, with, of course, the usual fluctuations. Capacity of the industry to produce has been considerably expanded recently, and while cement in storage is greater than it has been for several years, we do not believe expansion has been overdone."

A producer in the central Great Lakes says: "The recent wave of cement plant construction and enlargement is a clear indication that the industry views the future with considerable confidence. Most of the published forecasts as to future demand are approximately equal to the Associated General Contractors forecast of 450 million barrels of portland cement being required in 1965. These forecasts may be overly optimistic, but they appear to be well documented and probably should be considered as estimates of potential demand which may exist under favorable peace-time prosperous conditions.

"It appears to us that the probable effect of the national road building program on the cement industry has been overemphasized. This program will, of course, be helpful and is welcomed, but the increase from 80 million barrels in 1956 to the estimated 130 million barrels in the 1960's is not nearly so large an increase as indicated by the newspaper and magazine headlines."

According to a producer in the mid-South: "My view of the future for cement is one of cautious optimism. Cautious because of my clear memory of the thirties—it took 14 years after 1928 to bring output up to that year's figure; and the many "ifs" in the international, and thus our national, prospect. But I think in cement, and in industry in general, we must continue to expand and improve our productive capacity. Our wealth is in our capacity to make goods; not in bank balances which can be wiped out if debt becomes intolerable."



The four kilns at the Lone Star, Va., plant of the Lone Star Cement Corp., with the one added in 1956 at left. The two original kilns are in center.

A Southwestern producer says: "It is our belief that the growing population with its increasing needs for better and more homes, highways, industrial plants and all the material things that make modern civilization, will maintain a continued demand upon the cement industry that cannot be met without continued expansion in production facilities.

"The Federal Highway program demands will, in many localities, be well above the capacity of existing plants to meet, and still serve their regular trade."

A large Western producer says: "In the first place, we have never felt that the highway program would be as much of a factor as perhaps some others in the industry do. In the second place, we are of the opinion that work on the interstate program will not get under way as rapidly nor as smoothly as might be hoped. Each state, of course, will administer its own engineering, design (within the limits prescribed by the Bureau of Public Roads), the taking of bids, the awarding of jobs, etc. Our analysis indicates that there still remains to be cleared up right-of-way problems and in many states the shortage of engineers will tend to delay the rapid development of the full program. In spite of our somewhat pessimistic attitude we do look for a vastly increased use of cement in the next ten years and we are attempting to project from conservative market studies just what our own course should be."

In the opinion of a small Midwestern producer: "The cement industry is in an era of unprecedented prosperity; and in my opinion only two things could interrupt this healthy condition, over-expansion in some areas and pricing ourselves out of the market.

A producer in the Northwest says: "Here in the Northwest we have, as you know, many contemplated power dams with related flood control. There are so many of them and the demands are so great for all kinds of building, including the proposed road program, that the cement business and that of its related industries cannot help but be very good for many years to come.

"Whether or not new plants should be built in the West is debatable. I think the proposed construction program is very ambitious and the completion of it will be held up more from the lack of engineering ability, labor and money rather than from any possible shortage of cement."

A large California company says: "With reference to the national industry situation, we remain optimistic in looking for continued growth in practically all lines of construction with resulting increases in the use of cement and concrete products. We are even more confident of the future for the industry in our own area. However, while a significant increase may be expected nationally in the demand for cement as a result of the Federal Highway Program, we do not expect such demand to be as significant in our own area since highways represent a smaller percentage of total consumption here than for the nation as a whole."

CEMENT SUPPLY

At this time last year and for several years before that widespread and serious shortages of cement had caused users of cement to be apprehensive about the cement supply for the coming year. There was ample reason for such concern then, but there is no reason for it now. As we point out elsewhere in this review capacity has caught up with demand, the industry will go into the 1957 construction season with its silos full, and another 26,000,000 bbl. of producing capacity is scheduled to come into production before the heavy 1957 demand starts. Further expansions already started, which will go into operation later in 1957 and early in 1958, should be ample to take care of any further increase in demand through 1958 and probably much further. With production exceeding demand for the first time in many years it is felt that more attention can be given to operating economies. With facilities operated at normal capacities lower production costs are possible and cement of higher quality is produced.

A large company with plants over a large area says: "Consumers in the Northeast area did not suffer for any lack of cement and the end of the year will find us with greater stocks of finished cement than we had on December 31, 1955. These stocks are not greatly higher but they do point to the fact that we could have shipped more cement than we did.

"In the South and in the Midwest the condition was somewhat spotty but certainly we were under much less pressure in 1956 than we were in 1955."

Two other large companies, national in scope express the conviction that there will be no cement shortages in 1957.

A smaller company in the East says: "It is our feeling that the marketing situation in the northeastern area in 1957 should be somewhat similar to this year; however, if the projected heavy contract jobs progress according to the engineers' schedule, it is entirely possible that in the fall of the year we could experience a very tight supply situation. The year 1957, at this point, seems to us to be a year of realignment between supply and demand and a year to determine whether or not the market will bear the full weight of the increased capacity which this company along with others have made in the last few years."

Less enthusiasm is expressed by a company operating one plant in the eastern part of the Middlewest: "I cannot find myself as enthusiastic as some of my friends in the cement industry when they claim that everything is going to be booming for years to come. I do feel that for the next ten to fifteen years, unless there should be a sudden change in world affairs, the cement business will be good but there will be certain sections of the country which will be 'soft.' . . ."

An eastern Great Lakes producer says: ". . . expansions which are now under way or already completed by plants with which we compete, when added up into total available capacity, makes it appear likely that there will be more than enough cement to meet the needs of the industry in this area during 1957 and for some time to come. This transition from a very tight supply of cement into a market with considerable more than ample supply is probably the most important development in this area during 1956."

An Ohio Valley producer says: "Everyone seems to agree that there will be a substantial increase in the consumption of cement in this country. In ten years it may well be 150 percent of what it is this year. This will not be reached without some setbacks. In fact this year, both through increased production and less demand in some areas, there will be considerable cement carried over."

A large California producer reports on the entire Pacific Coast as follows: "We estimate that cement demand will be up in our entire marketing area, and particularly in the states of Oregon, Washington, California, and the territories of Alaska and Hawaii.

"Production will be up in Southern California; therefore, shortages should not exist in that location. Supply and demand should be fairly equal in the states of Oregon and

Construction photo of Marquette Cement Mfg. Company's new 1,250,000-bbl. plant at Milwaukee, Wis., which is now in operation.

Washington, with possible spot shortages. We personally anticipate some shortage in Northern California, due primarily to the anticipated increase in volume required by the Air Force and Corps of Engineers. Territories of Alaska and Hawaii should not suffer any shortage, though the demand will be up over 1956. . . .

"It is our belief that our entire marketing area will be in a generally sold-out condition with spot shortages and compensating locations being long on cement."

A firm in northern California feels that: "With new capacity added in 1956 amounting to 2,400,000 barrels or fifteen percent, the cement industry in Northern California faces the challenge of finding increased outlets in a noticeably developing buyers' market. There should be no shortages or delays in deliveries in 1956. Indeed, the industry may discover it has anticipated its needs for plant capacity several years ahead."

Another in the Pacific Northwest says that: "We have not had any cement shortage in this area in ordinary times, and demand remains fairly steady. The highway program has not caused any increase in demand and is not expected to for another two years. However, the dam program should consume large quantities of cement during the next three to five years."

PROFITS, PRICES AND COSTS

The very incomplete information available at this time indicates that the cement industry in 1956 again had one of the most profitable years in its history. Volume of shipments was apparently up about 6 percent over the 1955 record profit year and prices were up perhaps 6 percent, with the result that total value of shipments is estimated to have reached a new record of at least $940,000,000. This would be an increase of more than 10 percent over the 1955 total of $836,779,000. It must be remembered, however, that the cost of the vast expansion of capacity made in 1956 cut deeply into the industry's profits, most of this work having been done on borrowed capital.

The picture for 1957 is also very favorable, although again huge expenditures are being made for plant expansion and increased depreciation charges resulting from high priced capital additions will cut into profits even more than in 1956. Price increases have already been announced and a substantial increase in demand is confidently expected not only for the coming year but also for many others to follow.

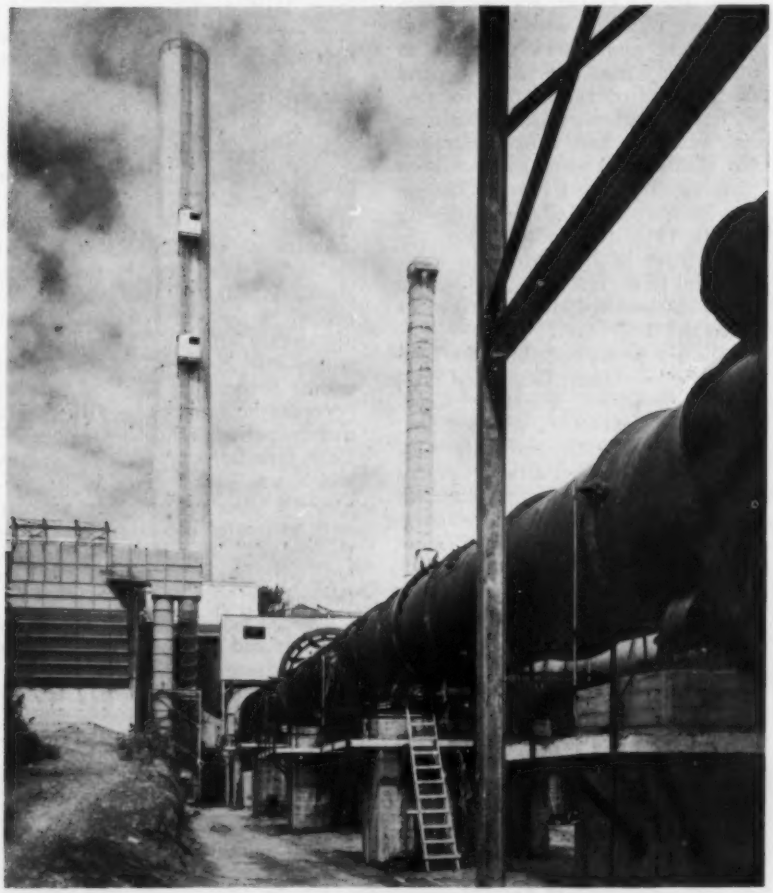
Prices Mill prices of cement again increased moderately in 1956, apparently just about enough to take care of increased production costs. The average mill price for the industry, which rose gradually from $2.83 per barrel in the first quarter of 1955 to $2.87 per barrel in the fourth quarter, jumped to $3.00 per bbl. in the first quarter of 1956. In the second quarter the average mill price rose to $3.03 and it is safe to assume that it was not over $3.10 per bbl. in the last quarter in spite of the fact that some companies put increases into effect in October. This would be an increase of $0.23 per barrel or 8 percent over a year ago. The average mill price for the year we estimate to have been about $3.05 per bbl., or 6 percent over the $2.85 average for 1955.

Judging from the limited information available prices will apparently follow a similar pattern in 1957. Most of the major producers have already announced price increases effective the first of the year, ranging from 15 to 25 cents per bbl. These increases are held to be justified by increases in costs already apparent and others expected during the coming year. They bring the prices as of January 1 up to $3.25 to $3.35 in most areas, with an apparent low of $3.10 in one area and a high of $3.45 in at least two others.

For several years now producers have been making their big price increases after the end of one construction season and before the next one. This has been done for the benefit of contractors, ready-mixed concrete producers and other cement users who must commit themselves on their own prices for large projects taking months to complete. Now these users can count on cement to be one item which will not increase materially in price before a contract is completed.

Costs Producers without exception experienced increases in costs in 1956 and anticipated further increases in 1957, with inevitable accompanying price increases. High-

The new kiln, with attached coolers, at Oswego, Oreg., operations of Oregon Portland Cement Company. This is essentially an 800,000-bbl. new plant.



er freight and labor costs are certain and other increases are expected. According to a large producer operating nationally: "Employment and other costs are continuing to increase in the cement industry just as they are in other industries. Allowances for depreciation to replace wornout and obsolete facilities at today's inflated costs are grossly inadequate. Continued upward pressure on cement prices seems to be indicated."

A large Eastern concern comments: "During 1956, our company experienced the sharpest increase in costs of purchased materials in recent years. The increases were much more general than they have been heretofore and there were repeated increases in the prices of many items during the calendar year which we have not experienced in any large measure before. The year 1956 was one in which this company was faced with the largest increase in cost of labor that has been experienced in our history.

"Through our continuing plant improvement and expansion programs, we have been able to hold our own on the cost of man hours per barrel of production which has in some way offset our increasing costs."

A mid-Great Lakes firm reports: "The cost of manufacturing a barrel of cement continues to increase. Indeed cost increases on a per barrel basis plus increased depreciation charges resulting from high priced capital additions have largely wiped out recent increases in the price of cement."

According to a producer in the mid-South: "We have had a very busy year with high production but not enough to meet our demand. Manufacturing cost is up about 8½ percent above last year (10 months) —largely direct and indirect labor increases. We have had no trouble with procurement."

One large California producer says that in: "1956 cement prices will remain firm in the state of Washington and the territory of Alaska during 1957. The state of Oregon will have a 15-cent price increase over and above the prices in 1956. There will be a price increase in Northern California and Western Nevada of 15 cents per barrel, which should average out at about the same price that existed during the calendar year of 1956. Price in the territory of Hawaii will be 15 cents per barrel over 1956 prices. We do not anticipate a price increase in Southern California for the first half of 1957; however, there *may* be a price increase after June of 1957."

According to a producer in northern California: "Costs have increased noticeably during 1956. Manpower alone is about ten percent more expensive now than it was a year ago. Prices have not kept up with costs."

1956 CAPACITY INCREASE

The portland cement industry in 1956 again increased its capacity considerably, probably exceeding the postwar record of 23,071,000 bbl. reported to have been added in 1955, which brought capacity up to 317,369,000 bbl. annually. It is estimated that about 34,500,000 bbl. of capacity was built in 1956 in the form of new plants and plant expansions and that at least 27,500,000 bbl. of this was new capacity. The capacity of the industry at the end of 1956 is, therefore, estimated at about 345,000,000 bbl. At least 33 new kilns were involved.

New Plants It is estimated that the six new plants built (one a clinker-grinding plant only) added 7,950,000 bbl., and all of this is believed to be new capacity. Included in these plants were five new kilns. Actually four of these plants are completely new and in new locations. The other two are new plants in every way but were built alongside older plants which remain in operation. These two plants depend on the older operations only for raw materials and they share existing raw material and clinker storages. No plants are known to have been abandoned during the year. The six new plants completed compares with two in 1955, two in 1954, none in 1953, three in 1952, three in 1951, four in 1950, one in 1949, two in 1948, and one in 1947—a total of 24 since V-J day.

The six new plants built in 1956 are: Consolidated Cement Corp., Paulding, Ohio.; Bessemer Limestone & Cement Co., Walford Sta., Pa.; Marquette Cement Mfg. Co., Milwaukee, Wis.; Peerless Cement Corp., Detroit, Mich.; Standard Lime & Stone Co., Martinsburg, W. Va., and Universal-Atlas Cement Co., Milwaukee, Wis. (clinker grinding only).

Plant Expansions At least 36 existing plants are known to have completed major expansion and improvement programs in 1956 which added materially to their capacity, and many others completed less important programs, some of which also added to capacity. Included in these programs were at least 28 new kilns. From the incomplete information available at this time we estimate that these 36 plants installed at least 27,000,000 bbl. of capacity in 1956. Of this total perhaps 7,000,000 bbl. replaced existing capacity, leaving an increase in capacity for the year of about 20,000,000 bbl. annually from plant expansions alone.

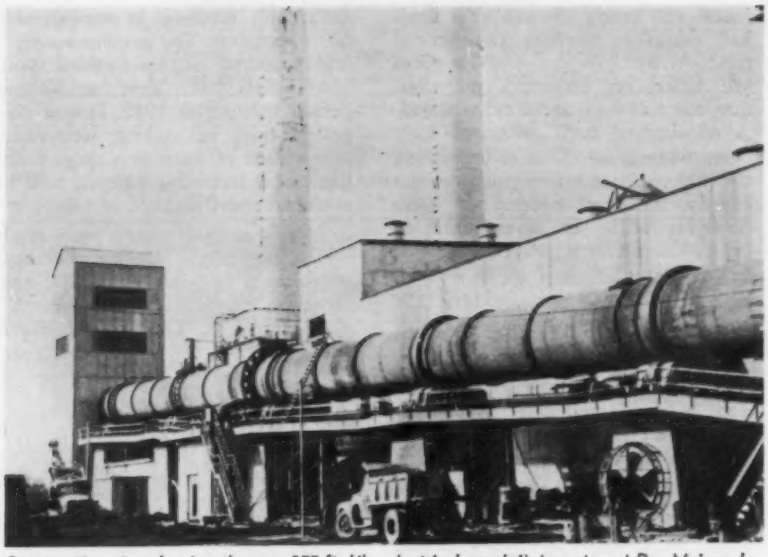
A year ago we estimated that of the more than 20,000,000 bbl. of capacity known to have been built in 1955, about 8,000,000 bbl. replaces existing capacity, leaving a total of 12,000,000 bbl. of added capacity for a total of 306,000,000 bbl. at the end of the year. The actual increase later reported by the U. S. Bureau of Mines was 23,071,000 bbl. for a total of 317,369,000 bbl. Obviously there was work done at some plants on which we were not informed. Probably the excessive demand also kept any appreciable amount of older capacity from being shut down.

Actually the capacity of the cement industry is indefinite and depends upon the point of view. A large percentage of production now comes from old kilns and other equipment long ago depreciated and in varying stages of obsolescence, and which would not be used except during period of acute shortage such as we have experienced during recent years. With the supply in 1957 probably exceeding demand it is certain that some of these obsolete facilities will be shut down.

In 1955 apparently about 93 percent of the year-end capacity was utilized, compared with official figures of 92 percent in 1954, 91 percent in 1953 and 87.8 percent in 1952. With the estimated capacity of the industry about 345,000,000 bbl. at the end of 1956, and the production about 318,000,000 bbl., about 92 percent of the year-end capacity was apparently utilized. The annual capacity used in the 12 months period ending September 30, 1956, was 98 percent, the same as used in the 12 months period ending September 30, 1955. One large producing company which was nearer right in its estimates a year ago than we were in ours, estimates industry capacity at the end of 1956 at about 360,000,000 bbl., with about 380,000,000 bbl. at the end of 1957.

Official figures on the capacity of the portland cement industry in the United States are as follows:

End of 1948	254,272,378	bbl.
" " 1949	258,948,399	"
" " 1950	259,448,000	"
" " 1951	281,873,000	"
" " 1952	284,014,416	"
" " 1953	287,498,330	"
" " 1954	294,298,000	"
" " 1955	317,369,000	"
" " 1956 (est.)	345,000,000	"



Construction view showing the new 375-ft. kiln, electrical precipitator, etc., at Des Moines, Ia., plant of Penn-Dixie Cement Corp.

FUTURE INCREASES

At this time the information on the amount of plant expansion for 1957 is too incomplete for anything but rough estimates to be made. Projects which have not yet been announced could be started and completed within the year, others under way can still be expanded, but they could also be curtailed or halted.

The 26 plants for which major expansions are planned for 1957, together with the ten new plants planned for 1957 completion, will install at least 51 new kilns and a large amount of other equipment. These projects total at least 49,000,000 bbl. annually of capacity, of which it seems that at least 36,000,000 bbl. might be new capacity. Allowing for the probability that a fairly large amount of this work will be delayed into 1958, and that some of the plans might not materialize, it still seems likely that as much as 30,000,000 bbl. of new capacity might go into operation in 1957. This would bring the capacity of the industry up to about 375,000,000 bbl. at the end of 1957. These predictions are based on the fact that during the last few shortage years little old capacity was retired. With production ahead of demand in 1957 this condition might change.

New Plants The situation with respect to new plants is quite clear. There are actually 10 new plants in various phases of construction which are scheduled for completion during 1957. These plants have a total of 18 kilns and a combined capacity of 20,830,000 bbl. Four of these plants are completely new operations at new locations. The others are either completely new operations alongside existing plants, or basically new operations using the same deposits and perhaps some of the other existing facilities such as raw material and clinker storage. This is a growing practice and in many cases will eventually lead to the complete abandonment of the old facilities, depending on business conditions, obsolescence, etc. Future additions will, of course, be made to the new plants. In no case, however, is it known that any existing capacity will be retired on completion of the new operations, so nearly all of it may be regarded as capacity to be added by the industry in 1957.

It is important to note that seven of these 10 new plants are scheduled for completion early in 1957, in time for the expected heavy construction season. These seven plants have a capacity of 14,330,000 tons, which should go a long way toward preventing any shortage. These new plants are also quite well distributed throughout the country.

The 10 new 1957 plants under construction are: General Portland Cement Co., Miami, Fla.; Ideal Cement Co., Ada, Okla., and Houston, Tex.; Lehigh Portland Cement Co., Union Bridge, Md.; Lone Star Cement Corp., Lake Charles, La.; Marquette Cement Manufacturing Co., Cape Girardeau, Mo.; Medusa Portland Cement Co., Wampum, Pa.; Permanente Cement Co., Cushenberry, Calif.; Texas Portland Cement Co., Orange, Texas.; Universal-Atlas Cement Co., Buffington, Ind.

There are at least four other new plants proposed by companies already in the cement business and these will probably not go into operation until 1958. Those on which work is known to be in progress are: Alpha Portland Cement Company, Lime Kiln, Md.; Lehigh Portland Cement Co., Miami, Fla.; Permanente Cement Co., Scholle, N. M.

The Riverton Lime & Stone Co. is reported to be nearly ready to start work on its proposed 1,500,000-bbl., $10,000,000 plant at Riverton, Va.

There are also a number of new plants proposed in various parts of the country by outside interests and it is possible that one or more of these might materialize.

The Republic Cement Corp., Prescott, Ariz., early in 1956 awarded a $6,500,000 contract to Brown and Root, Inc., Houston, Texas, for the design and construction of a 3,000-bbl. per day cement plant at Drake, 30 miles north of Prescott.

A few months ago the Mississippi Valley Portland Cement Co. said that ground has been broken for its proposed 1500-bbl. per day, $3,500,000 plant near Vicksburg, Miss.

There has been no recent information on the proposed 875,000-bbl., $6,100,000 cement plant to be built at Foreman, Ark., by a group of Texas industrialists.

Early in 1956 the Verde Valley Industries of Phoenix, Ariz., purchased from the Halliburton interests a 1,200-acre site near Clarksdale, Ariz. The new owners retained the plan to pump limestone slurry from there 120 miles to a cement plant to be built in Phoenix.

Late in 1956 the newly-formed Hercules Portland Cement Co., Inc., announced a proposed $2,000,000 plant to be built at Locust Grove, Okla. This later became the Ozark Portland Cement Co., which went into receivership. The plant is said to have been partly constructed and steps are reported being taken to reorganize the firm and complete construction of the plant.

Also late in 1956 the Strelene Realty Corp. announced its intention to build a 6,000-bbl., $10,000,000 plant near Kingston, N. Y.

Late in 1956 the New Mexico Portland Cement Co. was formed with the intention of building an 800,000-bbl., $8,000,000 plant near Las Vegas, N. M.

Plant Expansions The amount of expansion of existing plants to take place in 1957 is, of course, difficult to determine accurately at this time but is also certain to set a new record. At this early date it is known that at least 26

plants have such major programs either under way or definitely planned for completion in 1957. These projects involve 32 new kilns with a total capacity of 27,300,000 bbl., most of which apparently will be new capacity. Again, as in the case of the 1957 new plants, it is impossible to tell how much of the old capacity will be shut down with the expected capacity exceeding demand for the first time in many years. At least 15 of these projects, totaling 16,000,000 bbl., are scheduled for completion early in 1957, in time for the heavy construction season.

In addition to the above a number of companies report that they have major programs ready to be started on short notice when conditions are deemed to be suitable. As usual a large number of minor improvement, expansion, or maintenance programs are under way or planned, but these have little effect on capacity.

LONG RANGE POSSIBILITIES

Big business long ago found that it could no longer afford to depend on guesswork in making its plans for the future. The rapid growth of our economy and constantly changing conditions have made wrong guesses much too costly. Business analysis has, therefore, become an essential function for industry and its plans are based on estimates projected five, ten and even more years ahead. A number of such estimates have been made in an effort to determine the approximate future course of the cement industry. Several of these have arrived at similar estimates by somewhat different methods.

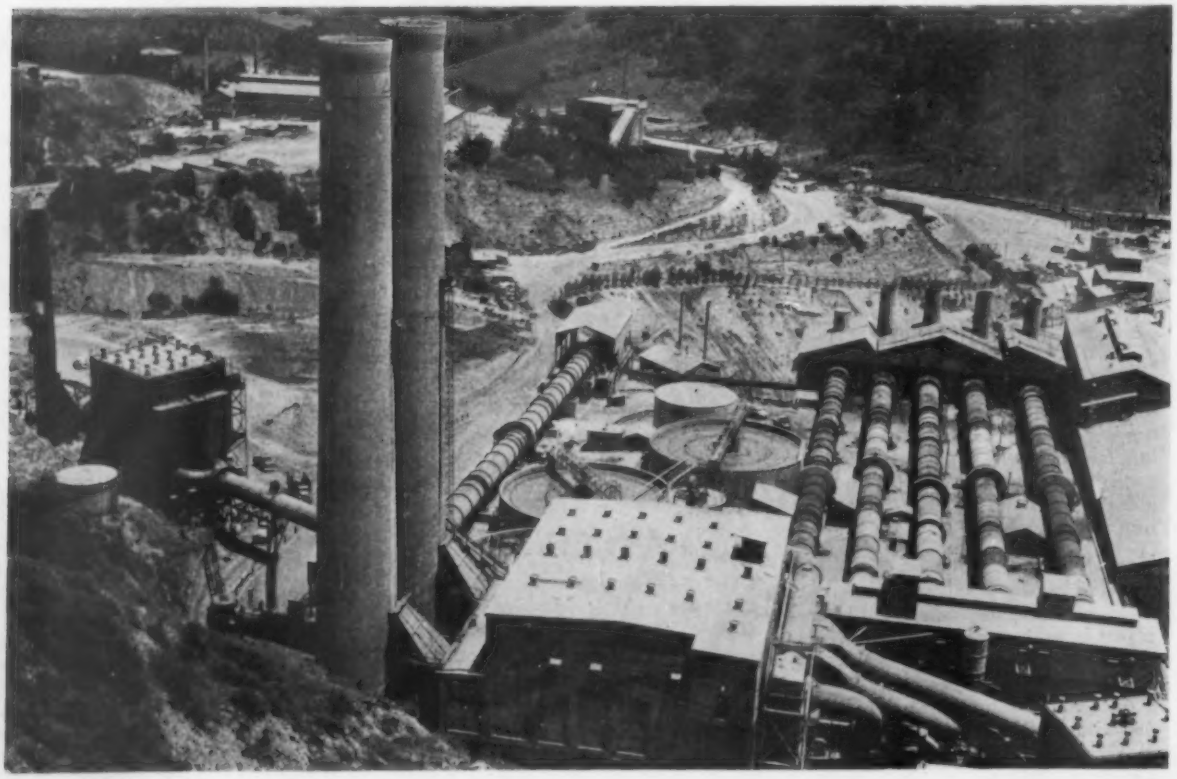
Not satisfied with existing estimates, the Allis-Chalmers Mfg. Co. early in 1956 completed an exhaustive analysis which took into consideration every important indicator which could be used in making such a projection. This arrived at estimates of 359,000,000-bbl. production and 395,000,000-bbl. capacity at the end of 1957, and 438,000,000 bbl. and 482,000,000 bbl., respectively, for 1962, when the new highway program is expected to reach its peak.

In this study it was pointed out that, in the past, expansion of cement facilities has been in large increments. This has been due to the tendency of operators to expand simultaneously in order to maintain competitive places. Such a wave of expansion took place during the 1920's, adding 130,000,000 bbl. to capacity in the 10 years beginning in 1922, and resulted in considerable overexpansion. The present surge, it was estimated, will have added about 135,000,000 bbl. over a 10-year period starting in 1949. It was suggested that, in making long-range projections of cement capacity the likelihood that this pattern will be repeated must be kept in mind.

In this analysis charts were made which showed the relation of cement production to population, new construction expenditures and gross national product. The last-mentioned was selected as the base for estimates and the average of a number of G.N.P. projections was found to be about $500 billion for 1965. Based on this figure and the relationship between cement production and G.N.P. in 1955, the probable 1965 normal demand would be about 375 million barrels. This figure was considered the minimum as it does not allow for certain factors.

The effect of the new (then proposed) highway program was then considered and the added requirements over 1955 highway consumption were calculated. The result was the following table showing projected cement industry capacities through 1965, with and without the highway program. These projections

The new sixth kiln at the Permanente Cement Company's Permanente, California, plant. The new electrical precipitator and stack are at the far left. This plant has a capacity of 8,500,000 bbl. annually.



CAPACITY REQUIREMENTS
Millions of Barrels

	Without Highway Program		With Highway Program	
	Production	Capacity	Production	Capacity
1957	313	344	359	395
1958	322	354	379	417
1960	337	370	406	447
1962	352	388	438	482
1965	375	412	461	507

were based on Gross National Product estimates plus a 10 percent margin of reserve, believed necessary for satisfactory year-around operations.

According to these estimates the development of the highway program will allow the cement industry little time to relax even after all the expansion now planned has been installed. A capacity of about 390,000,000 bbl. is indicated by the end of 1958 but it is estimated that a capacity of about 480 million barrels would be necessary to satisfactorily meet the demand. This would mean adding 90 million barrels during the 4-year period from 1959 through 1962. By 1965, another 25 million barrels would be needed.

CURRENT CONDITIONS

Judging from the comments made by producers the most important development of 1956 in the cement industry was the tremendous expansion program which perhaps exceeds anything the industry has ever before experienced. Many others feel that the important development was the narrowing of the gap between supply and demand of cement, which of course, was the direct result of this expansion program.

One West Coast producer feels that: "The trend most noticeable during the year has been one of integration, particularly of the vertical type in this area, that is the acquisition of ready-mix concrete and rock, sand, and gravel outlets. This has been accomplished by merger and by making investments in the subsidiary lines of the business."

A producer in the Pacific Northwest says: "As to the most important developments and trends during 1956, and how they have affected the industry, I would say that the passage of the Federal Highway Bill was the most important single factor and, as indicated by those who have analyzed this program, will increase the demand for portland cement some 38 percent during the life of this construction program."

According to a Middlewest producer: "We have just completed a very successful and satisfactory year and are confidently looking forward to another good year in 1957. No doubt the most important development, as it affects our industry, during the year 1956, was the passing of the Federal Highway Bill. This will surely affect our entire industry directly over the next number of years."

An Eastern producer says: "During the year 1956, we feel that the most significant development in our area was the change from a short supply market to what we feel was more of a selling market with one or two nominal exceptions. The northeastern area had, and still has, a great deal of proposed work on the books of contractors and ready-mixed suppliers which has been held up due either to a shortage of steel or the tight money market. It has been an unusual year because of the high volume of business on the books which did not move during the normal construction season."

A large company operating nationally says: "The year just drawing to a close has been an excellent one for the construction industry generally. The demand for cement has continued at record levels and, with recent additions to industry capacity, there have been few areas of deficiency during 1956. Industry shipments for the year will probably exceed 305 million barrels—a new record for the tenth consecutive year."

A mid-South producer says: "It appears that our present prosperity is largely based on heavy defense spending on a cold war basis. If a hot war comes, then we are all in for trouble. If the present condition continues, we feel that our market area will pretty fully absorb our present and planned capacity."

A Northwestern producer says: "We continue to enjoy a sizeable amount of business from the products people, and ready-mixed concrete, of course, is accepted wherever it is offered. Sales are gradually being transferred from the lumber yards who used to be our best customers."

A California producer commented on conditions there as follows: "Except for a temporary slackening in housing construction in this area during 1956, all other types of construction have continued at a high rate and are expected to do so over a period of the next few years. As a matter of fact, the housing situation is now easing a bit and is expected to pick up somewhat again early in 1957. We expect the market gain in 1957 to increase by approximately 5 percent in this area. However, others as well as ourselves are increasing their capacities so that total ability to produce will exceed expected demand by a considerable amount next year. For this reason our efforts will not be primarily directed towards expansion, but rather operating our plants in the most profitable manner possible, given the excess of capacity over total demand. All producers here will face this problem as a result of the general expansion in capacity that took place during 1956 and as a result of the further increase in capacity of about 20 percent that will take effect in 1957."

INDUSTRY PROBLEMS

Judging from the reports received from producers on this subject the problems confronting the industry keep pace with increasing prosperity and perhaps also with the growth of the industry. Many of the problems mentioned are, of course, connected with the huge expansion program under way and include strikes—in the industry and in those supplying the expansion program—and shortages of steel, engineers, and equipment. Possible labor troubles, it is felt, will be the most serious problem during the coming year.

A number of producers in all parts of the country expect no serious problems or handicaps to production in 1957. A large company with plants throughout most of the country east of the Rockies and one in the Pacific Northwest briefly state that they know of no foreseeable handicaps to production at this time. No shortage of labor, or labor problems are anticipated.

An Eastern producer is more specific: "We have had no particular problems or handicaps with regard to production through shortages, labor costs, prices and so forth. We, of course, like all other cement producers, have experienced increased labor and material costs. However, our experience is no different than in other industries. We, like they, are doing our best to increase productivity to offset rising costs and, hence, minimize the effect on selling prices."

A California producer is even more specific: "As you can see from the above, we anticipate no particular handicap to business as a result

of production problems, cement shortages, or plant capacities. Also since our plans for the near future are best described as a more or less continual modernization of existing facilities, we anticipate no problems in connection with the labor supply. . . .

"In summary, our problems will be more in the areas of marketing and cost reduction than enforced draft production. We expect to be faced with continuing increases in the cost of the things we buy and believe that at the present price of cement, these increases will continue to constitute a real problem. This problem is, of course, compounded by the high cost of any capital expenditures required. With the development of a market in which there is a substantial excess of capacity over demand we believe also there will be an increased emphasis upon product quality and an increasing trend towards product diversification. These are problems that all producers in this area will face during 1957 and probably through 1960."

Those who reported experiencing strikes or who expect them in 1957 were from the Middle West and East. One company operating widely east of the Rockies states: "In our judgment the most important development in 1956 was the narrowing of the gap between supply and demand involving cement. There were still some trouble spots but in those cases we think it was largely the result of delays to cement expansion programs caused by scarcity of materials or by strikes. We had production scheduled for 1956 that was never achieved because of these delays. Fortunately, the kinks have been ironed out and the increased production will be available to us starting the first of 1957."

A mid-Great Lakes producer says: "We were held up all year by strikes and other delays so that it now looks as though it will be some time in January before we get the new kilns in operation."

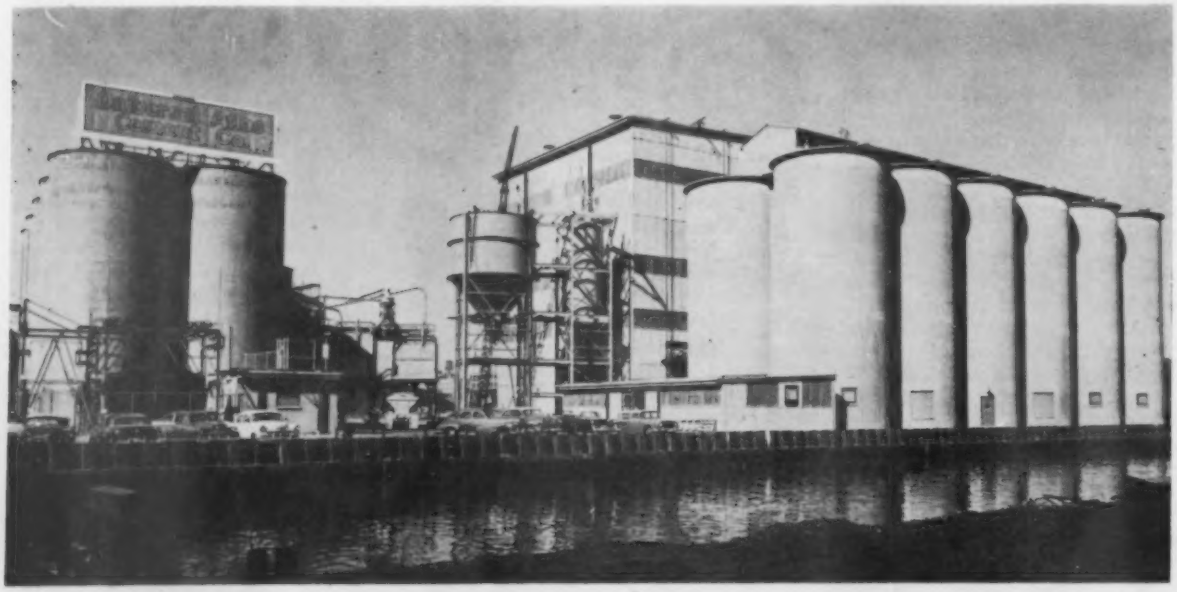
A Midwestern producer says: "It seems to us that labor is one element that could change the outlook very materially, and affect production, costs, prices, and trends in manufacturing methods. We experienced a 112-day strike this year of workers in our . . . mill, which was in violation of the working agreement between the union and the company, and in violation of instructions from the international union to the local union. Local conditions at . . . have since improved, but we lost production equivalent to approximately 700,000 barrels of cement, as the result of the arbitrary action of a mere handful of employees.

"If the international union should sponsor contract demands, in 1957, that many producers would oppose, the result could be, for the most of such producers, loss of production and diminished profits. We see this as a serious threat to stability of our industry during the coming year. The anniversary dates in many labor agreements in our industry were changed this year to May, which concentrates the bargaining period, which we dislike."

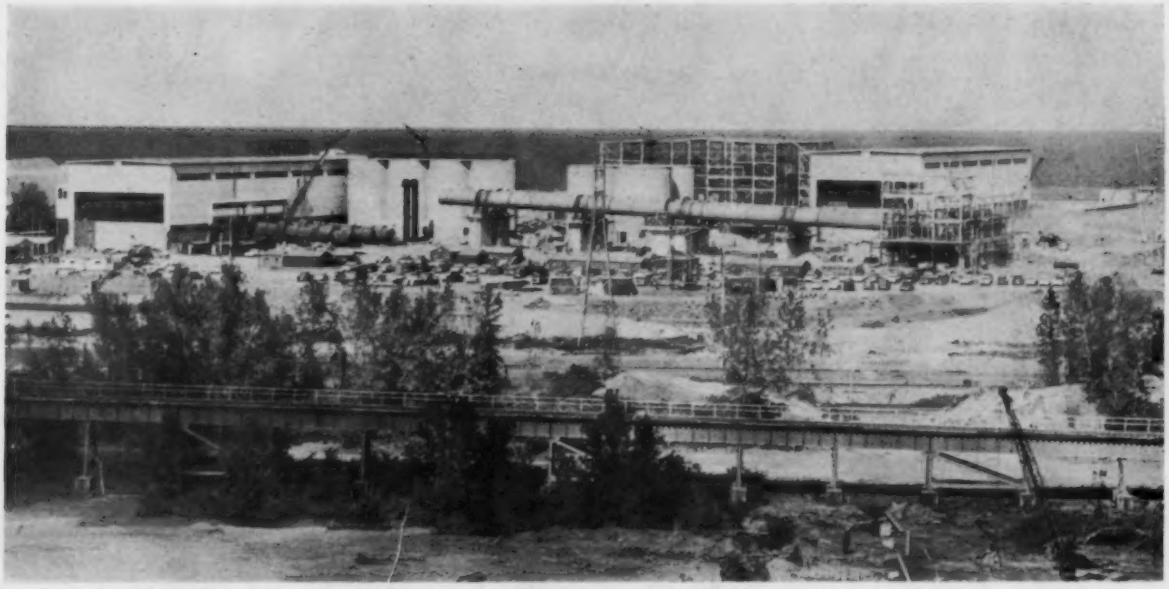
According to a producer in the mid-South: "One rather important development this year in cement is that in some sections production appears to have caught up with and maybe exceeded demand. Another is that labor has demonstrated pretty clearly that it now has the power to get about what it wants in increased wages and fringes. It is pretty well demonstrated that labor can hold out longer during a strike, and is more willing to accept one, than employers. So costs will continue to rise."

A producer in the Southwest says: "Shortage of steel may materially slow down construction of new plants and hold up expansion of existing ones."

A large producer operating over a wide area west of the Mississippi River made a thorough analysis as follows: ". . . with regard to the question on major problems that might be encountered during the expansion program. There are of course many and it is difficult to evaluate them thoroughly. One for instance is the unknown aspect of our economic position. Many sound thinkers feel that we have reached a high point and that we are due still for a recession, in fact if not a depression. If this type of thinking is correct we are indeed going to be faced with the very serious problem of overexpansion.



The new clinker grinding and packing plant of the Universal-Atlas Cement Company at Milwaukee, Wis. Clinker is received by boat from the Buffington, Ind., plant.



The new 3,000,000-bbl. plant being built at Buffington, Ind., by the Universal-Atlas Cement Company to supplement existing facilities there. On its completion, total capacity at this location will be 10,000,000 bbl. annually.

"Another question which is very much on our minds is the international situation and the impact which it might have on construction and the use of cement in this country should the cold war become hot at any time in the next four or five years.

"There are two objectives foremost in our minds: (1) That we keep our operations on a sound businesslike basis at all times retaining insofar as is possible the flexibility required to adjust with changing times. (2) We must fully recognize our responsibilities to our customers, our stockholders and our employees by keeping in position to utilize most effectively the potentials that appear as of today at least to be almost certain with regard to increased population and the resultant increased needs for highways, roads and streets, schools, hospitals, and all of the attendant improvements which the growth of the country is going to require as a whole if we maintain our present standard of living."

An Ohio valley producer says that: "There are still differences of opinion as to the best type of kiln and the best type of grinding machinery. How long these will continue we cannot say, perhaps forever. It is hard to get early delivery of important pieces of equipment and this condition is likely to run on at least through 1957, perhaps aggravated by a demand for steel for tankers brought on by the Suez situation."

An Eastern producer says: "We do believe, however, that as wages continue to spiral and taxes remain high, the industry must do all in its power to offset these two most important factors in production costs. This means, among other things, more efficient and more modern equipment, and automatic processes to replace labor."

A large producer west of the Mississippi River adds: "With regard to the labor force, it is one of our prime objectives in this entire program to further mechanize operations at every location so that we will be in position to meet the problems of increased hourly labor rates through either better production with the same labor force or approximately the same production with fewer man-hours of work."

Apparently in 1956 more portland blast furnace slag cement was produced than in any past year. One company reports that it introduced this type of cement in 1939 and the demand has since grown so rapidly that on January 1, 1956, the manufacture of regular portland cement was discontinued. Some companies have expressed the belief that the production of this type of cement results in considerably more wear and tear on the grinding mills than is generally recognized.

CHANGES IN OWNERSHIP

Again in 1956 there were several changes in ownership among cement plants and companies in the United States. Unlike 1955, however, these were not all absorptions by large companies of comparatively small independent operators. One of the most interesting of these transactions took place early in the year when the Pacific Coast Aggregates Corp., San Francisco, Calif., one of the country's largest producers of aggregates and ready-mixed concrete early in 1956 took over the Santa Cruz Portland Cement Co., with a 2,000,000-bbl. plant at Davenport, Calif. Following this development the company name was changed to Pacific Cement & Aggregates, Inc. No plans for expansion or improvement have yet been announced.

The American-Marietta Co. became an important factor in the cement picture early in 1955 when it took over the Southern Cement Co. which has a cement plant in Birmingham and two lime plants and a 1,000,000-bbl. cement plant at Roberta, Ala., which is now being expanded 60 percent. This company came into the cement industry late in 1954 when it purchased the Standard Lime and Cement Co., which has a cement plant at Martinsburg, W. Va., and lime, dolomite refractory and other plants at other locations. The original cement plant has a capacity of 1,900,000 bbl. annually and a 1,400,000-bbl. new plant was completed at the same location late in 1956.

Late in 1956 American-Marietta Co. took over the Dragon Cement Co., Inc., which has plants at Northampton, Pa., and Thomaston, Maine, with a combined capacity of 4,500,000 bbl.

IMPORTS AND EXPORTS

There is no complete information available on the amount of cement imported into the United States for even a part of 1956. It seems obvious, from fragmentary reports received, however, that imports must have been at least as great as in the preceding year. According to U. S. Bureau of Mines reports imports of Roman, portland, and other hydraulic cements in 1955 totaled 4,559,953 U. S. (376-lb.) bbl., valued at $12,712,524. Belgium-Luxemburg led with 1,468,341 bbl., followed by West Germany with 1,230,608 bbl., Canada with 724,100 bbl., Sweden with 428,820 bbl., and Mexico with 266,907 bbl. Other exporters were: Dominican Republic, 149,364 bbl.; Yugoslavia, 109,506 bbl.; Colombia, 56,331 bbl.; Israel, 52,947 bbl.; United Kingdom, 27,476 bbl.; Denmark, 24,580 bbl.; Finland, 12,889 bbl.; Portugal, 2,990 bbl.; Netherlands, 1,759 bbl.; Japan, 1,186 bbl.

Apparently there was some change in the volume of cement shipped by different countries in 1956. During the summer, for example, a report was received to the effect that New Orleans had just received its 250,000th bbl. of cement from Israel, and that more was expected soon. It was not stated whether all of that amount was in 1956 but much of it must have been. Earlier reports told of two shiploads, totaling 14,000 tons, arriving in Florida from Israel. Many other reports told of cement from various foreign sources being received at Great Lakes ports, even as far inland as Chicago.

It would seem that, with the capacity of the domestic industry now passing demand, imports could be expected to drop. Apparently a different view is held by the Rochester Portland Cement Co., an importing firm. It was recently announced that a cement storage and packing plant would be built on a dock in Rochester, N. Y., at a cost of over a million dollars. This company is a subsidiary of the Lake Ontario Portland Cement Co., Ltd., which is completing a new cement plant at Picton, Ont., from which the cement will be shipped via Lake Erie.

PLANT EXPANSIONS

Aetna The Aetna Portland Cement Co. in January, 1956, completed an expansion program at its Bay City, Mich., plant which increased its capacity nearly 50 percent —to 3,200,000 bbl. annually. Included in the program were a new 11- by 400-ft. Allis-Chalmers kiln a Fuller inclined-grate clinker cooler, a 7- by 24-ft. raw mill, a 9½- by 16-ft. Allis-Chalmers finish mill, a new stack, and related equipment. Additional storage silos were built, with a capacity of 100,000 bbl.

Allentown The Allentown Portland Cement Co. in 1956 added new cement storage silos and a new coal mill at its West Conshohocken, Pa., plant.

At the Evansville, Pa., plant new cement storage silos will be completed early in 1957, and plans are under way for a new stone drying and grinding department, to be completed late in the year.

Alpha The Alpha Portland Cement Co. late in 1956 completed a $1,000,000 expansion program at its Ironton, Ohio, plant. A Nordberg finish mill and eight new blending silos built by Macdonald Engineering Co. were included. At Manheim, W. Va., a Traylor preliminary clinker mill was installed.

The capacity of the St. Louis, Mo., plant was increased 200,000 bbl. early in 1956. Also announced were plans to expend approximately $6,800,000 for the 700,000-bbl. expansion of facilities at this plant. New equipment includes three new Nordberg finish mills, slurry storage tanks, an 11- by 380-ft. Nordberg kiln, a cooler, 140,000-bbl. bulk-loading cement storage silos, etc. Many other improvements of a general nature were included. This work was done by Macdonald Engineering Co. This will be a virtually new plant alongside the older operation.

Later in 1956 the company announced plans for the construction of a new 2,000,000-bbl. plant at Lime Kiln, Md., scheduled for completion early in 1958. Equipment includes two 11-ft. 3-in. by 400-ft. kilns, two raw mills and two finish mills—all Allis-Chalmers—and a Traylor primary crusher. The Macdonald Engineering Co. is doing the design and construction, and the major machinery and electrical equipment is by Allis-Chalmers. With the completion of all the above work, the combined capacity of the company's nine plants will be about 15,000,000 bbl. annually.

Ash Grove The Ash Grove Portland Cement Co. is believed to have completed a $2,000,000 modernization program at its Chanute, Kans., plant early in 1956. A new 10- by 325-ft. F. L. Smidth kiln and additional grinding facilities were installed to replace older equipment, with no increase in capacity.

A similar expansion is reported to be under way at the Louisville, Nebr., plant slated for completion early in 1957.

Bessemer The Bessemer Limestone & Cement Co. late in 1956 completed what is essentially a new plant alongside its existing operation at Walford Station, Pa. This $4,500,000 program added 1,300,000 bbl. to the 2,225,000-bbl. annual capacity at this location. New equipment included a 12- by 450-ft. F. L. Smidth kiln, a 10- by 35-ft. raw mill and a 10- by 31-ft. finish mill (both Allis-Chalmers), dust collectors, cooler, etc. New drive-under cement storage silos with a capacity of 200,000 bbl., and a new concrete stack were added. Preliminary studies and a general layout and flow design were made by W. R. Bendy, engineers, and the detailed design, construction, and equipment installation was done by the Macdonald Engineering Co.

Calaveras The Calaveras Cement Co. late in 1956 completed a $4,000,000 expansion program which increased its capacity 1,200,000 bbl. to more than 4,500,000 bbl. annually. Included were an 11-ft. 3-in. by 360-ft. Allis-Chalmers kiln, dust collectors, coolers, mills, cement storage silos, slurry tanks, etc. In the summer of 1956 a new bulk cement transfer plant was opened at San Leandro.

California The California Portland Cement Co. is reported to have put its new $12,000,000 plan at Mojave, Calif., in operation late in 1955. This 2,000,000-bbl. dry-process plant has two 12- by 11-by 350-ft. Allis-Chalmers kilns. In mid-1956 the company is reported to have begun an expansion program at this plant which will increase its capacity 3,500,000 bbl. to 5,500,000 bbl. annually by late in 1957. Three more kilns of the same size and five grinding mills—all Allis-Chalmers—are being added.

Carolina Giant The Carolina Giant Portland Cement Co. has an expansion program under way at its Harlevville. S. C., plant which will add 1,000,000 bbl. per year to its capacity. This program is expected to be completed early in 1957. Included is a 11-ft. 3-in. by 425-ft. kiln, a raw mill, and a marl dryer—all F. L. Smidth—an Allis-Chalmers finish mill, and 100,000-bbl. bulk silos designed and built by Macdonald Engineering Co.

Consolidated The Consolidated Cement Corp. late in 1956 announced that it had started shipping cement from its new 1,250,000-bbl. plant near Paulding, Ohio.

This is a wet-process operation with an 11-ft. 3-in. by 425-ft. F. L. Smidth kiln. Work has already begun on an addition to this plant, to double its capacity by late in 1957. This new operation now brings the total capacity of the company up to 4,750,000 bbl. at its three plants. Also in 1956 a new 525-ft. kiln and grinding and auxiliary facilities were installed at the Fredonia, Kans., plant, increasing capacity about 1,300,000 bbl. annually.

Dewey The Dewey Portland Cement Co. in 1956 was reported to have put back into operation one of the old 10½- by 200-ft. kilns at its Dewey, Okla., plant, increasing capacity 400,000 bbl. annually. A new finish mill, cement storage silos, and coal handling equipment were also added.

Additions at the Davenport, Iowa, plant early in 1956 included a classifier, a thickener, screen-house equipment, a new stack, etc. This $1,000,000 program increased capacity 450,000 bbl. to 3,200,000 bbl. annually.

The company does not have any major plant improvements or expansion plans for 1957. There is no further information on an earlier report that a new 1,250,000-bbl. $10,000,000 plant is planned at Placitos, near Albuquerque, N. M.

Diamond The Diamond Portland Cement Co., Middle Branch, Ohio, has a 1,000,000-bbl. $4,000,000 expansion program under way for completion about June, 1957. Capacity on completion will be about 2,400,000 bbl. This is the first step of a long-range program, which is to be carried out in three stages. This work will affect the crushing department and two Allis-Chalmers dry ball mills are being added for raw grinding. Included is a 12½- by 75-ft. Allis-Chalmers A.C.L. grate kiln with a 12½- by 160-ft. rotary section, followed by a 6- by 100-ft. air-quenching cooler. W. R. Bendy, cement engineers, developed the overall program and structural design, and plant layout and supervision of construction are being handled by Mac donald Engineering Co. in co-operation with Bendy engineers.

Dragon The Dragon Cement Co., Inc., was taken over late in 1956 by the American Marietta Company. Its plants at Northampton, Pa., and Thomaston, Maine, have a combined annual capacity of 4,500,000 bbl. No important future expenditures are planned. Plans for a proposed new plant at West Stockbridge, Mass., have been abandoned.

General-Trinity The Trinity Division of General Portland Cement Co. is reported to have completed an expansion program late in 1956 at its Fort Worth, Tex., plant. An 11-ft. 3-in. by 425-ft. F. L. Smidh kiln and three new Allis-Chalmers grinding mills were installed. Capacity was increased by 1,250,000 bbl. to 3,250,000 bbl. annually.

There is no recent information on the satus of the 1,250,000-bbl. addition to its Dallas, Tex., plant. This included a new 425-ft. kiln, a Traylor raw grinding mill, etc. At the Houston, Tex., plant two of the kilns were equipped with electrical precipitators at a reported cost of $750,000.

A new kiln with related equipment was installed in 1950 at the Signal Mountain, Tenn., plant, increasing its capacity 450,000 bbl. annually. A new quarry was also developed and placed in operation.

The company recently announced that construction has started on its new plant near Miami, Fla. This was originally to be a $10,000,000 wet-process plant with two 11-ft. 3-in. by 425-ft. F. L. Smidth kilns and a capacity of 1,250,000 bbl. annually. Plans now call for doubling its capacity to 2,500,000 bbl. at a total cost of $15,000,000. When his, and other work, is completed late in 1957, the General Portland Cement Co., at its seven plants, will have a total producing capacity of 18,500,000 bbl. annually.

Halliburton The Halliburton Portland Cement Co. in 1956 added cement storage silos of 100,000-bbl. capacity costing $250,000 to its Corpus Christi, Tex., plant. These were designed and built by Macdonald Engineering Co. Dust-collecting equipment was also installed at a cost of $100,000.

The company is reported to have abandoned earlier plans to build two new 2,500-bbl.-per-day cement plants at Phoenix and Clarksdale, Ariz. The property at Clarksdale has been sold to Verde Valley Industries, Inc., of Phoenix for a cement plant site.

Hercules There is no recent information available on the status of the modernization program under way at the Stockertown, Pa., plant of the Hercules Cement Corp. This work, which was scheduled for completion early in 1957, was to increase the capacity of the plant 500,000 bbl. to 3,300,000 bbl. annually. The work consisted of replacement of milling and materials-handling facilities and of the remaining four old kilns by a single new 12- by 280-ft. F. L. Smidth kiln identical with the two previously installed.

Huron The Huron Portland Cement Co. is completing a 3,000,000-bbl. addition to its plant at Alpena, Mich., which will give it a total clinker production of approximately 12,000,000 bbl. annually. This work will be completed in January, 1957. Major items of equipment include two Allis-Chalmers raw mills, two Allis-Chalmers 11- by 175-ft. rotary kilns with Fuller-Humboldt suspension-type preheaters, three finish mills, air separators, ec. The McDowell Co. has the contracts for most of the new buildings and related equipment.

No further expansion at Alpena or at the Superior, Wis., grinding plant is contemplated at this time.

A $150,000 addition to the company's distributing plant at Oswego, N. Y., has been completed, and the company is reported to have purchased a port site at St. Joseph, Mich., for a similar plant.

In July, 1956, the company put into service its latest self-unloading cement boat, the *E. M. Ford.*

Idaho The Idaho Portland Cement Co. has no expansion program or plans under way and is concentrating its efforts on increasing production with the equipment available. Production has been increased from 1300 bbl. per day in 1950 to 3200 bbl. today.

Ideal In June, 1955, the Ideal Cement Co. announced a new $55,000,000 expansion program which would increase the company's production capacity by 50 percent. This included three new plants and major expansion at six others. Two of these new plants are under construction and four of the plant expansions are under way, all scheduled for completion in 1957.

The $15,000,000 new plant at Houston, Tex., is being built alongside the existing plant. It will have an annual capacity of 2,900,000 bbl., supplementing the present 1,250,000 bbl. plant. The first of the two 12- by 450-ft. kilns there is scheduled to go into operation in May, and the second in June, 1957.

The Ada, Okla., project consists of an essentially new 1,500,000-bbl. plant to tie in with the existing 2,150,000-bbl. operation. A new 12- by 450-ft. Allis-Chalmers kiln, two grinding mills, and auxiliary equipment are involved. This plant is being built at an estimated cost of $14,000,000 and is scheduled for completion in the fall of 1957.

A Traylor raw mill and slurry

feeder were installed in the Ideal plant at Mobile, Ala., in 1956, and a Traylor clinker mill was installed in the Baton Rouge, La., plant.

A $10,000,000 program is under way at the Boettcher, Colo., plant to increase capacity 800,000 bbl. to 2,000,000 bbl. annually. The existing dry-process plant is being converted to the Fuller-Humboldt preheater process with two units going in. Also being installed are two 1,500-hp. Allis-Chalmers raw mills, dust collectors, additional cement storage, etc. Completion of these improvements is scheduled for March, 1957.

At Baton Rouge, La., installation of a new kiln and new raw and finish-grinding mills was completed in September, 1956, along with auxiliary equipment, at an estimated cost of $4,577,000. Capacity was increased 600,000 bbl. to 2,800,000 bbl. annually. The installation of electrostatic dust precipitators and a new stack are scheduled for completion in July, 1957.

At New Orleans, La., the capacity of the company's terminal has been increased from 100,000 to 250,000 bbl. at a cost of $1,332,000.

At Okay, Ark., the No. 2 kiln is being lengthened and new coolers are being installed, increasing the capacity 600,000 bbl. to 1,950,000 bbl. This project is scheduled for completion about June, 1957.

Studies are reported to be under way for expansion at Mobile, Ala., Superior, Nebr., and Trident, Mont., as well as at the company's operations on the Pacific Coast. Construction of another new plant alongside an existing operation is a possibility during the next five years.

Keystone The Keystone Portland Cement Co., Bath, Pa., is reported to have completed a 25 percent expansion of its plant early in 1956. A new kiln and related equipment were installed.

Kosmos The Kosmos Portland Cement Co., Kosmosdale, Ky., late in 1956 completed the installation of a new rotary kiln, increasing the capacity of this plant to over 2,000,000 bbl. annually. This company is also contemplating the addition of a second plant at the same location when more capacity is required. The proposed plant would use the same trackage, service departments, quarry, etc., as the existing plant.

Lehigh The Lehigh Portland Cement Co. apparently is progressing satisfactorily with its widespread expansion program. The most important project is the new 2,000,000 bbl., $21,000,000 plant being built alongside its present 1,000,--bbl. Union Bridge, Md., plant. New equipment includes three 11-ft. 6-in. by 40-ft. F. L. Smidth kilns, two 9-ft. 6-in. by 26-ft. 3-in. mills, two coal mills, and a Traylor gyratory crusher. This plant will probably be completed early in 1957.

It is reported that a fourth 10-ft. 6-in. by 380-ft. F. L. Smidth kiln and three Unidan mills—two raw and one finish—have been added to the Bunnell, Fla., plant. Each of these kilns has an annual capacity of 775,000 bbl.

Other work done in 1956 included new cement storage and packing facilities at Buffalo, N. Y., and Metaline Falls, Wash., at a cost of about $4,000,000. With the completion of all above work the capacity of all the company's plants will be 27,200,-000 bbl. annually.

Late in 1955 Lehigh announced plans for a 1,000,000-bbl. expansion of its Mason City, Iowa, plant to 3,000,000 bbl. annually. Included will be an 11-ft. 6-in. by 400-ft. kiln and three mills—all F. L. Smidth.

In mid-1956 the company announced plans for a 2,000,000-bbl., $20,000,000 plant near Miami, Fla., for probable completion by the end of 1957. It will be designed under the supervision of F. L. Smidth & Co. Equipment includes two 12- by 11- by 12- by 475-ft. kilns and eight 1,250-hp. grinding mills — all F. L. Smidth.

Early in 1956 Lehigh also bought 2,000 acres of high-calcium limestone deposit near Watertown, N. Y., to insure its present limestone supply or for a possible future cement plant.

Lone Star The Lone Star Cement Corp. in 1956 continued on a large scale its $57,-000,000 expansion program to increase its capacity about 10,200,000 bbl. when completed. This will bring the capacity of the Lone Star system up to a total of 45,000,000 bbl.—34,000,000 bbl. for U. S. consumption. Included is a new plant at Lake Charles, La., and the extensive expansion and modernization of six others, all to be completed in 1957. The present status of this work is as follows:

The modernization of the Hudson, N. Y., plant involves a new crushing plant to be located in he quarry, extension to the rock storage building, two new 9½- by 15-ft. ball mills in closed circuit with vibrating screens, two additional 7- by 22-ft. wet-grinding tubemills, and an 11- by 300-ft. rotary kiln, complete with slurry filters—all Allis-Chalmers; also a cooler, a coal mill, a Western Precipitation combination mechanical and electrostatic dust collector and a 7- by 175-ft. concrete stack, a new finish mill with four 9½- by 14-ft. preliminary clinker ball mills and four 7- by 26-ft. tubemills—also Allis-Chalmers — and four additional slurry tanks.

The present program also calls for a complete new 7,500-kv. high-tension sub station and a 4,160-v. distribution system. Capacity will be increased by 1,000,000 bbl. to a total of 3,000,000 bbl. annually.

Modernization and enlargement of the Nazareth, Pa., plant has been in process for some time, and will continue through the better part of 1957. Work completed in 1956 includes the following: A new crushing plant located in quarry, complete new raw- and finish-grinding departments all in one building, consisting of eight 11- by 16-ft. ball mills in closed circuit with air separators. Three are used for raw grinding and five for finish grinding. Drying of the raw material is accomplished in the air separators. Nine 35-ft. diameter by 100-ft. high clinker silos. Complete new 4,160-v. distribution system.

The following work will be completed in 1957: two 11-ft. 3-in. by 300-ft. Traylor dry-process rotary kilns with 7- by 44-ft. grate coolers and coal mills. The two present large kilns and the two new kilns will be equipped with Research Cottrell combination mechanical and electrostatic dust precipitators, and the cleaned gases will be discharged through two 225-ft. concrete stacks.

Most of the 800,000-bbl. expansion program at Lone Star, Va., was completed during 1956 and consists essentially of an 11- by 16-ft. raw ball mill driven by a 1,000-hp. motor, a 10- by 340-ft. rotary kiln duplicating the three kilns now in service, and two 8- by 32-ft. finish-grinding mills are duplicates of the present four mills. Extensions have also been made to the coal, rock, and clinker storage buildings and to the homogenizing tanks; and an enlargement of the power distribution system has been completed. A Koppers precipitator was installed with the fourth kiln, duplicating the three units already in service.

Early in 1957 a new crushing plant will be completed. In the future the two crushing plants will be in regular operation—one on limestone and the other on a high lime shale.

The 500,000-bbl. Spocari, Ala.,

expansion program was largely completed in 1956. It includes an enlargement to the rock storage, a new rock drier, and a 10- by 150-ft. Allis-Chalmers rotary kiln, followed by a rotary cooler and additional finish-grinding equipment. A Research Cottrell electrostatic dust precipitator was installed in connection with the rotary driers. The plant is located on the Warrior River. New barge-loading facilities have been installed for handling cement and clinker shipments.

The Dallas, Tex., plant is being enlarged through the addition of a 9- by 32-ft. grinding mill, two 11- by 280-ft. F. L. Smidth rotary kilns with grate coolers, two Allis-Chalmers 9- by 30-ft. finish mills, and a complete new electrical distribution system. The new structures at Dallas include four slurry tanks and three clinker silos. The above equipment and buildings are scheduled to be substantially completed in 1956 but will not be placed in operation until after the first of this year. Productive capacity is being increased by 1,400,000 bbl. to 3,700,000 bbl. annually.

Western Precipitation is supplying electrostatic dust precipitators for all six kilns. This work will be completed during the spring of 1957. The precipitators will be followed by two exhaust fans and a new 300-ft. concrete stack.

Work is progressing on the new $14,000,000 Lake Charles, La., plant which is scheduled to go into production in the spring of 1957. The new plant will have an initial capacity of 2,000,000 bbl.

Raw materials will consist of oyster shell and clay, which will be ground in three 9- by 30-ft. grinding mills. Two kilns have been installed, each 11 ft. 3 in. in diameter by 400 ft. long, followed by 7- by 44-ft. coolers.

Finish grinding will be done in three 9- by 32-ft. mills. The entire plant is constructed of concrete, and considerable use has been made of precast, prestressed construction.

Koppers electrostatic precipitators are being installed in conjunction with each of the rotary kilns, and the gases will be discharged through a 225-ft. concrete stack. The storage silos and packhouse are being designed and built by the Macdonald Engineering Co.

The Houston, Tex., expansion program involves an addition to the raw-grinding department, consisting of a 9½- by 15-ft. ball mill, an 8-ft. 6-in. by 36-ft. wet tubemill, an 11-ft. 3-in. by 400-ft. F. L. Smidth kiln, a 10-ft. 6-in. by 156-ft. rotary cooler, a 9-ft. 6-in. by 34-ft. finish mill, a new clay wash mill, several new slurry tanks, and a complete new power distribution system.

Much of the work is scheduled to be finished by the end of 1956; however, the new equipment will not be in complete operation until this spring. Capacity will be increased by 1,100,000 bbl. to 3,200,000 bbl. annually. A Buell electrostatic precipitator is being installed in conjunction with the two old kilns, and the new kiln and will be followed by three fans and a 300-ft. concrete stack.

Louisville The Louisville Cement Company, Speed, Ind., is reported to have recently completed a new and modern crushing-and-screening plant for both cement and commercial rock. Late in 1957 a new 11- by 390-ft. Allis Chalmers kiln will go into operation.

Marquette The Marquette Cement Mfg. Co. is progressing satisfactorily with its extensive expansion program. Included are two plants and a major expansion at another. Clinker capacity at the end of 1956 will be 13,780,000 bbl. from eight plants; at the end of 1957 it will be 16,180,000 bbl. from 10 plants. There are no fixed plans for more new plants, but large-scale modernization of several older plants is planned.

The new $7,000,000 plant at Milwaukee, Wis., is reported to be in operation. The feature of this 1,250,000-bbl. plant is the 13- by 175-ft. Allis-Chalmers A. C. L. kiln. A 6- by 100-ft. Allis-Chalmers air-quenching cooler was also installed.

The new 1,250,000-bbl., $7,000,000 wet-process plant which is being built alongside the existing plant at Cape Girardeau, Mo., is nearing completion. Major equipment includes a 12- by 450-ft. Allis-Chalmers kiln and a 6- by 100-ft. cooler. Kaiser Engineers has the contract for the design and construction of this plant. The Macdonald Engineering Co. built 100,000-bbl. plant storage silos, 30,000-bbl. barge-loading silos, and slurry tanks. It is reported that $500,000 is being expended for dust collectors at the older plant.

During 1956 the company completed a $1,750,000-bbl. program at its Des Moines, Iowa, plant which increased its capacity by 500,000 bbl. annually. Two Allis-Chalmers grinding mills were included.

Marquette is reported to have under consideration the installation of a 450-ft. kiln and related equipment at its Brandon, Miss., plant, which would double the capacity to 2,500,000 bbl. annually. This work is scheduled for completion about May, 1957. A new barge-loading terminal is also planned at Vicksburg to handle much of the output at this plant.

Medusa The Medusa Portland Cement Co. late in 1955 began the installation of a third 10- by 375-ft. kiln at its York, Pa., grey cement plant; this kiln went into operation late in 1956.

At about the same time work was started at the Dixon, Ill., plant on an $8,000,000 rebuilding project which will add about 1,000,000 bbl. to its capacity when completed early in 1957. This project includes Fuller-Humboldt preheaters for three new 10-ft. 6-in. by 150-ft. Allis-Chalmers kilns. With the completion of this project, the combined capacity of the company's seven plants will be 10,250,000 bbl. annually.

Late in the summer of 1956 ground-breaking ceremonies were held for the new $12,000,000 plant at Wampum, Pa., which will have a capacity of 2,500,000 bbl. Completion was scheduled for the third quarter of 1957. Two 12- by 390-ft. kilns and four grinding mills—all Allis-Chalmers—are being installed at this plant, which is located alongside the existing plant there.

Missouri The Missouri Portland Cement Co. early in 1956 began a multimillion-dollar expansion program at its Sugar Creek, Mo., plant (near Independence), which will double its capacity to 2,400,000 bbl. annually. New equipment includes a second 360-ft. kiln, grinding mill, etc. Both kilns are also being equipped with electrical precipitators. This plant was built in 1954, and the new project is scheduled for completion early in 1957.

A new Traylor 10- by 32-ft., 2-compartment clinker mill was installed in the Prospect Hill, Mo., plant (near St. Louis) late in 1956.

Monarch The Monarch Cement Co., Humboldt, Kans., in July, 1956, announced a new $6,500,000 expansion program to supplement the extensive work done in recent years. When completed late in 1957, the capacity of this plant will have been increased 50 percent to 2,250,000 bbl. annually. Included in the program is a new 450-t.p.h. crushing plant, a single-burner flash drying chamber for shale and clay, two 10- by 15-ft. raw mills, a third 11- by 230-ft. kiln, two 10- by 282-ft. finish mills, waste-heat boilers, turbo-generators, etc. There will be a new laboratory build-

ing, shops, and other facilities. Macdonald Engineering Co., the general contractor, is also making the general plant layout.

Monolith The Monolith Portland Cement Co. reported no change in the capacity of its two plants in California and Wyoming in 1956. Some additional capacity may be added in 1957.

National Portland The National Portland Cement Co., Brodhead, Pa., in June 1956 completed a program including a 10 ft. 3 in., by 9 ft. 3 in. by 10 ft. 9 in. by 341 ft. F. L. Smidth Unax rotary kiln rated at 2,000 bbl. daily. Preceding the kiln is a new type Smidth slurry preheater. A new Smidth raw mill was also installed.

Nazareth The Nazareth Cement Co., Nazareth, Pa., is reported to have completed an expansion program in 1956 which included a Fuller-Humboldt preheater.

North American The North American Cement Corp. in 1956 is reported to have completed a plant improvement and expansion program which increased its capacity 1,000,000 bbl. over the 1955 output. This included expansion of the Howes Cave, N. Y., plant and its conversion from the wet to the dry process. Included were a new 9- by 30-ft. Traylor 2-compartment mill, Fuller coolers, new cement storage, etc. Capacity was increased by 3,000 bbl. to 8,000 bbl. daily.

At the Security, Md., plant a Fuller-Humboldt preheater, a new raw mill, driers, etc., were added. The Crosby Construction Co. did the engineering on both plants and the construction at Security.

Northwestern States The Northwestern States Portland Cement Co., Mason City, Iowa, has just completed a major two-year expansion program which increased the plant capacity by 750,000 bbl. annually. Three new 11- by 165-ft. Allis-Chalmers kilns and other equipment replaced six old kilns. Additional 200,000-bbl. cement storage, and packing facilities will be completed early in 1957. This work was designed and built by the Macdonald Engineering Co.

No further plans have been outlined for expansion in the immediate future.

Olympic The Olympic Portland Cement Co., Ltd., Bellingham, Wash., is planning the installation of an 11- by 416-ft. F. L. Smidth Unax kiln which will double its capacity, to 2,000,000 bbl. annually, by early 1958.

Early in 1956 the company opened a new $600,000 distributing plant on Harbor Island in Seattle. Cement is hauled by barge from the Bellingham plant.

Oregon The Oregon Portland Cement Co. in April 1956 completed an expansion program at its Oswego, Oreg., plant which increased its capacity 800,000 bbl. to over 2,000,000 bbl. annually. This is essentially a complete new plant alongside the older one. New equipment includes a 287-ft. F. L. Smidth kiln, two 8- by 36-ft. Unidan mills, dust collectors, crushers, etc.

A similar installation at the Lime, Oreg., plant which will double the present 500,000-bbl. capacity of that plant, will be completed in January, 1957. Included are a 9-ft. 6-in. by 10-ft. 9-in. by 350-ft. kiln and two Unidan mills—one raw and one finish. Over $3,000,000 is being spent at each of these plants.

Peerless The Peerless Cement Corp. in August, 1956, began production at its new $7,500,000 Brennan Avenue plant in Detroit, Mich., which is rated at 1,250,000 bbl. annually. Major equipment includes an 11-ft. 6-in. by 425-ft. Traylor kiln, a 7- by 14-ft. rod mill, and a 7- by 22-ft. ball mill in the raw department, and two 10-ft. 6-in. by 17-ft. ball finish mills—all Allis-Chalmers. The cement storage silos were built by the Nicholson Co. and the concrete stack by the Heine Chimney Co. Giffels & Vallet did the design from a general plan provided by Peerless engineers. This new plant boosted the company's capacity for its three plants to 6,500,000 bbl. annually.

During the next several years the company plans to continue the postwar rehabilitation of its two older plants at a cost of about $1,000,000 per year.

Penn-Dixie The Penn-Dixie Cement Corp., which in 1955 completed a $5,000,000 expansion program at its Petoskey, Mich., plant, late in 1956 completed a similar program at its Des Moines, Ia., plant. Capacity was increased 1,000,000 bbl. to 2,340,000 bbl. annually. Included was an 11- by 375-ft. Kennedy-Van Saun kiln, mills, an electrical precipitator, etc. A clinker grinding mill was also installed at the Buffalo, N. Y. (Federal) plant.

Permanente The Permanente Cement Co. in July, 1956, completed a $4,000,000 expansion at its Permanente, Calif., plant, increasing its capacity 1,500,000 bbl. to 8,500,000 bbl. annually. Equipment added included a 12- by 448-ft. F. L. Smidth kiln, two grinding mills, electrostatic dust collectors, etc.

The new $12,000,000 plant at Cushenberry, in the Lucerne Valley southeast of Victorville, Calif., is scheduled to go into operation early in 1957 with a capacity of 2,500,000 bbl. annually. Principal equipment includes two 12- by 450-ft. F. L. Smidth kilns, three Unidan mills—one raw and two finish—grate coolers, electrical precipitators, etc.

Several months ago engineering was begun for a proposed 1,400,000-bbl., $10,000,000 new plant at Scholle, 55 miles southeast of Albuquerque, N. M. A wet process plant is planned with one 12- by 450-ft. kiln. Completion is scheduled for late 1957.

Pittsburgh Coke The Pittsburgh Coke & Chemical Co., Neville Island, Pa., in 1956 completed a $500,000 modernization and expansion program which increased clinker grinding capacity 200,000 bbl., for a total capacity of 2,000,000 bbl. annually.

Pittsburgh Plate The Columbia Cement Division of the Pittsburgh Plate Glass Co. in 1956 completed an expansion program at its plant near Zanesville, Ohio, which increased its capacity 1,000,000 bbl. to 3,000,000 bbl. annually. New equipment included a 12- by 450-ft. Allis-Chalmers kiln, a finish grinding mill, etc. This work, including electrical engineering, was done by the Macdonald Engineering Co. Earlier a new crushing plant had been installed in the limestone mine.

Ponce The Ponce Cement Corp., Ponce, Puerto Rico, is reported to have completed an extensive expansion program in 1956. Included were a new 12- by 500-ft. kiln with a capacity of 4300 bbl. daily, four grinding mills, a cooler, etc., all furnished by Allis-Chalmers. This company also put into service a new 9,000-ton cement carrier converted from a Liberty ship collier at a total cost of $2,500,000. This vessel is carrying cement from the Puerto Rico plant to the company's distributing plant at Port Everglades, Fla.

This distributing plant is now being enlarged. Included will be 150,000-bbl. under bulk-truck loading silos designed and built by Macdonald Engineering Co.

Riverside The Riverside Cement Co. in 1956 concentrated its expenditures on its Oro Grande, Calif., plant. A new office and laboratory were built. Now under construction and planned for

completion during 1957 are new cement grinding mills, as well as additional facilities for cement storage and shipping. The cost of this project is about $3,500,000.

Scheduled for completion in January, 1957, is a complete modernization of the waste-heat power installation at the Crestmore plant.

South Dakota The South Dakota Cement plant at Rapid City, S. D., in 1956 completed the installation of a new 11- by 375-ft. kiln, an air-quenching cooler, and raw- and finish-grinding equipment — all Allis-Chalmers — which increased its clinker producing capacity to 2,400,000 bbl. annually. A third complete finish grinding department was also added, with a capacity of 3600 bbl. daily, giving a total capacity in this department of 10,000 bbl. daily. This work, including electrical engineering, was done by the Macdonald Engineering Co.

Plans are under way for a third 11- by 375-ft. kiln and auxiliary equipment; this 900,000-bbl. addition is expected to be in operation by mid-1958.

Southern The Southern Cement Co., Birmingham, Ala., was bought early in 1956 by the American Marietta Co. In 1954 Southern had put in operation a new 1,000,000-bbl. cement plant at Roberta, Ala. An expansion program now under way, scheduled for completion late in 1957, will increase output by 60 percent. New equipment includes a 12- by 420-ft. F. L. Smidth kiln, a Traylor secondary crusher, and two Allis-Chalmers grinding mills.

Southwestern The Southwestern Portland Cement Co. during 1956 is reported to have completed the installation of a 10-ft. 6-in. by 330-ft. kiln and other equipment at its Victorville, Calif., plant, which increased its capacity 15 percent. A $500,000 program at the El Paso, Tex., plant increased capacity 1,000 bbl. daily. Included were three Allis-Chalmers grinding mills. Dust collectors were also installed.

Standard Lime Early in 1956 the Standard Lime & Cement Co., a subsidiary of the American Marietta Co., put into operation a 1,400,000-bbl. wet-process addition to its Martinsburg, W. Va., plant, which is virtually a new plant. The existing installation is rated at 1,900,000 bbl. annually. Equipment in the new plant includes a 12- by 450-ft. kiln, two raw mills, and a finish mill—all Allis-Chalmers. The new cement storage silos were designed and built by Macdonald Engineering Co.

Standard Portland The Standard Portland Cement Co. (Diamond Alkali Co.) early in 1956 completed a $1,000,000 expansion at its Painesville, Ohio, plant. This added 320,000 bbl. of capacity annually. Included were a new clinker mill and auxiliary equipment.

Early in 1956 another program was announced which will increase capacity another 1,000,000 bbl., for a total of 3,000,000 bbl. annually. This will include the conversion of another lime kiln to cement clinker manufacture, and the addition of electrostatic dust collectors, new raw and finish mills, and more slurry and clinker storage. This work is planned for completion in time for the 1957 construction season.

Texas The new 680,000-bbl. wet-process cement plant of the Texas Portland Cement Co. at Orange, Tex., is expected to go into production in January, 1957. Oyster shell and clay will be the raw materials. All machinery and equipment was supplied by Kennedy-Van Saun, including a 10- by 300-ft. rotary kiln, an air-quenching cooler, and raw- and finish-grinding compartment mills. Facilities are provided for shipment by barge, car, and truck.

Universal-Atlas The Universal-Atlas Cement Co. is progressing with its extensive expansion program. Early in 1956 a new kiln and related equipment were installed at the Fairborn, Ohio, plant, increasing its capacity one-third. New 225,000-bbl. cement storage silos were built by the Macdonald Engineering Co.

Also early in 1956 improvements were made in the crushing, storage, and drying departments at the Independence, Kans., plant. These had no effect on capacity.

The new 1,500,000-bbl. clinker-grinding and packing plant at Milwaukee, Wis., went into operation in October, 1956. This facility, supplementing an existing packing plant there, receives its clinker by boat from Buffington, Ind. New equipment includes an 8- by 80-ft. Traylor rotary dryer. Silos were designed and built by Macdonald Engineering Co.

The additional plant at Buffington is expected to be completed early in 1957. New equipment includes three 9- by 80-ft. Traylor rotary dryers. This 3,000,000-bbl. operation will increase the capacity at that location to 10,000,000 bbl. annually.

The installation of a fourth kiln at the Hudson, N. Y., plant is expected to be completed during the second half of 1957. Included are a 12- by 350-ft. kiln and three 8-ft. 6-in. by 30-ft. mills — all F. L. Smidth. This will increase capacity about one-third.

There has been no recent information regarding a proposed new plant near Lorain Ohio. Early in 1956 an agreement was reached with the Baltimore & Ohio R. R. Company for the purchase of the land. Later the city of Lorain was reported to be studying the proposal.

Volunteer The Volunteer Portland Cement Co., Knoxville, Tenn., early in 1956 completed the installation of cement silos which increased its storage capacity 144,000 bbl. These silos, built by the Crosby Construction Co., are designed for bulk loading into cars underneath.

An expansion program is under way which is expected to increase output by 40 percent—to about 3,000,000 bbl. — by October, 1957. Additions include a 10- by 300-ft. Allis-Chalmers kiln, with grinding and handling auxiliaries, a new crushing plant, and a new coal handling plant. This work is being done by the Macdonald Engineering Co.

Whitehall The Whitehall Cement Co., Cementon, Pa., in 1954 began a program for the complete rehabilitation of its plant. Early in 1955 a $2,400,000 stage of this program was completed which included a crushing plant, storage, coal mills, etc. In December, 1956, a second stage was completed which included a 10-ft. 6-in. by 150-ft. F. L. Smidth rotary kiln. A long-range program for further rehabilitation and expansion is planned.

Wyandotte The Wyandotte Chemicals Corp., Wyandotte, Mich., reports that it has nearly completed the expansion program (begun early in 1956), which will virtually double the former capacity of 1,200,000 bbl. annually. A substantial portion of the increase in capacity will be represented by facilities introduced to produce portland slag cement. Of the $2,500,000 being invested, over $500,000 is for air pollution control, including electrostatic precipitators. New equipment includes Traylor primary and secondary crushers.

The company expects certain refinements in process to provide additional capacity increases that will be available in the spring of 1957.

Aggregate Production Continues Climb

producers look ahead with further expansion plans

By BUREN C. HEROD

ACCORDING to information received in the annual survey conducted by PIT & QUARRY during the closing weeks of 1956, producers in all sections of the country enjoyed increased output of sand, gravel, and crushed stone in each of the two preceding years, and have apparently gone on to establish new records during the past year.

This healthy situation has assumed the aspect of a habit with the industries involved, since—with the exception of just one 12-month period in the past decade—a steady climb has been recorded. The gains experienced are further reflected in the confidence of aggregate producers who, unlike members of other segments of the country's economy, look expectantly ahead toward even greater growth.

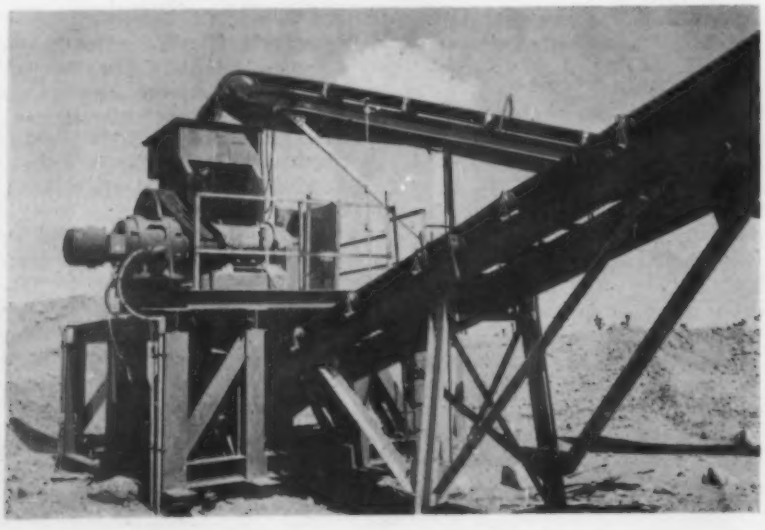
The growing volume of construction reported on elsewhere in this review and forecast section is the predominant factor behind the increased production of aggregates since, in 1956, an estimated 92 percent of the sand and gravel output and nearly 70 percent of crushed stone output were accounted for by building activity.

As in the survey of last year, detailed questionnaire forms were distributed to several thousand aggregate producers on a nationwide cross section basis. The information requested of the companies surveyed covered the years 1954, 1955, and 1956. These data were then compared with the latest statistics compiled by the Bureau of Mines (1954).

In addition to the latter, a comparison could be made at this time with the 1954 report of the Bureau of the Census. Thus, for the first time in several years, a base is available from which the information supplied by producers in the annual survey may be projected with expected greater accuracy. Since some of the production data for 1954 were collected jointly by the two government bureaus, the information at hand for that year provides an unusually good reference for subsequent tonnage reports and estimates.

In view of the above, the estimate made here last year on 1954 sand and gravel production (450,000,000 tons) was highly conservative. This is due in part to the fact that Bureau of Mines final 1953 figures were used as a base, and partly to the application of the estimates then furnished by producers to that base for the succeeding year. The final report of the Bureau of Mines indicated a production of 560,828,000 tons (both commercial and noncommercial) in 1954—an increase of 27 percent over the preceding year. A portion of this increase is ascribed to an improved coverage of the industry by the Bureau, and a large part to the greater consumption of sand and gravel in building and highway construction. The latter is also reflected in the fact that producers' estimates were apparently more conservative than actual experience.

On that basis it appears that last year's estimate of 1955 is too low (at that time the producers estimated a nominal gain while a 20 percent increase is now reported)



This skid-mounted primary jaw crusher can be moved in accordance with advancing excavation in the pit of Terminal Rock & Sand, Littlerock, Calif.

The territorial breakdown of our survey data is based on the major divisions shown on this map. Department of Commerce regions are used with the exception of the South, which we have divided into the Southeast and Southwest. Further regional breakdown is not followed.

and an output of 635,000,000 tons —both commercial and non-commercial—may have been established. If estimates for gains in 1956 are born out, a production of about 675,000,000 tons will have been attained.

Information supplied by the operators surveyed indicate that 42 percent expect to experience a further increase in the coming year, while only 3 percent anticipate a decline. Approximately one-third anticipate a leveling off.

With respect to the crushed stone industry, the 1954 Bureau of the Census report lends support to the estimate made here last year of 313,000,000 tons produced in 1954. Although the report figure of 283,000,000 tons is lower, this excludes non-commercial production—a category which approximates 10 percent of all crushed stone output.

According to producers' data, a 13 percent gain was experienced in 1955, and a further rise of 4 percent during last year. This would indicate production in the neighborhood of 350,000,000 and 360,000,000 tons in 1955 and 1956, respectively.

While not all of the sections of the country were optimistic last year with respect to continued gains, a favorable reaction to the future is indicated from all areas in the current returns. On a countrywide basis, 32 percent of the operators anticipate further increases while about 40 percent expect production to remain at the present high level. Only 2 percent expect a decline. Possible further gains are lent support by the fact that one-fifth of the companies reporting plan to expand.

Steady gains in construction volume have been reflected in the crushed stone picture, particularly in view of the fact that nearly 70 percent of estimated 1956 output is in the concrete aggregates and roadstone categories. Agstone, per producers' reports, has apparently gained ground and comprises about 9 percent of the total, while fluxstone, due largely to the mid-1956 steel strike dropped to 11 percent.

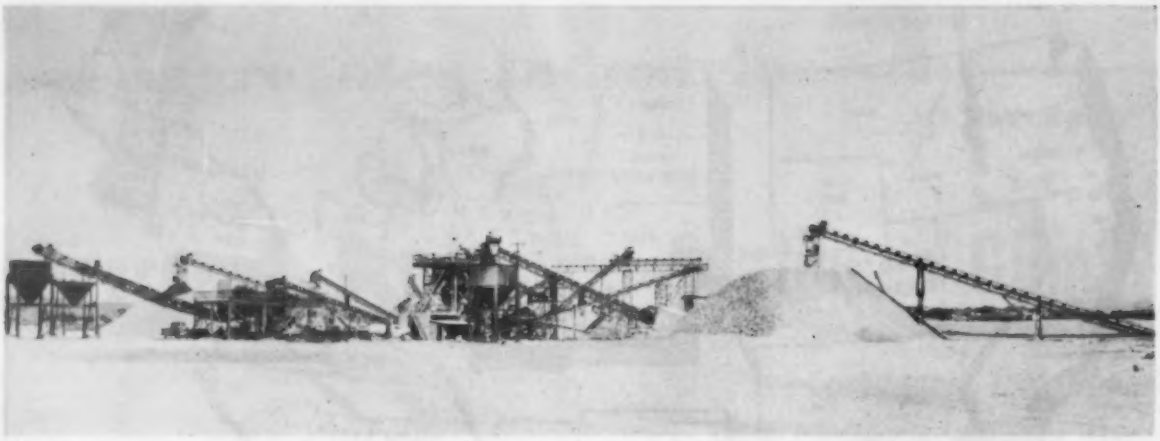
In conformity with the step taken last year for the first time, the survey questionnaires were tabulated for this review on the basis of geographic sectors that approximate market areas drawn by the U. S. Department of Commerce.

Along with production data covering each of three years, the survey forms completed and returned by the producers contain—for the same years—information on which comparisons may be drawn in the matters of selling price, wages, hourly capacities, etc. All returns are treated as confidential, and individual figures are not presented. They appear only as factors in regional or nationwide averages.

SAND AND GRAVEL

The revised and impressive estimate of tonnage for 1956 has for a starting point the new base year data of the 1954 Census report, and the improved industry coverage in that year on the part of the Bureau of Mines. On the basis of the combined commercial and non-commercial output (560,828,000 short tons) reported by the latter sand and gravel has replaced bituminous coal—historically the No. 1 mineral in the United States—in tonnage volume. In view of comparative construction dollars amount, i. e., $37.6 billion in 1954 and an estimated $46 billion in 1956, sand and gravel production will approximate 675,000,000 tons or more.

Further support is furnished by survey returns which indicate estimated increases of 20 and 17 percent in 1955 and 1956, respectively. In 1955, by section, the following gains were indicated: North Central—25 percent; Northeast — 8 percent; Southeast—44 percent; Southwest—13 percent. For last year the breakdown shows these increases; North Central—15 percent; Northeast—40 percent; Southeast — 9 percent; Southwest—20 percent; and West —20 percent.



An overall view of Southern Pacific Milling Company's sand and gravel Sisquoc operation near Santa Maria, Calif. This is reported to be the first plant to utilize sink-float beneficiation on gravel in the western part of the country.

Hourly Capacity Due to the fact that a survey of such scope as would allow presentation of finite capacities is beyond the limitations of time and staff, the variations in capacities between years by sections of the country is not offered on the basis of tonnage. However, the percent of change is considered significant, and, as reported, are as follows (in 1956): North Central — up 4 percent; Northeast—up 8 percent; Southeast —up 21 percent; Southwest—up 16 percent; and West—up 12 percent.

With respect to other operating and equipment data, the months in production were reported. The average proved to be 10 months with the Southwest enjoying a year-round situation while the North Central and Northeast sections reflect climatic differences in the 9.7 months reported by each.

Operation of portable plants was indicated by 14 percent of the answering producers. The North Central area led with 16 percent of the plants reported in this category, and was followed by the Southwest with 15 percent. The Northeast reported 13 percent, and the West 8 percent.

Equipment for crushing gravel was reported for 53 percent of all plants returning the data, and an average of 38 percent of the gravel removed was so processed.

With respect to washing equipment, the percentage of plants by section employing these units was: North Central—92 percent; Northeast and Southeast—100 percent; Southwest—85 percent; and West —100 percent. Over 90 percent of the total production was reported as being processed through this cleaning.

Selling Price On a country-wide basis the selling price of sand again showed an increase during the past year and per operators' figures is up 3 percent to an average of $1.08 per ton. Gravel prices reported also showed a gain, of 6 percent, in arriving at the average for the country of $1.35 per ton.

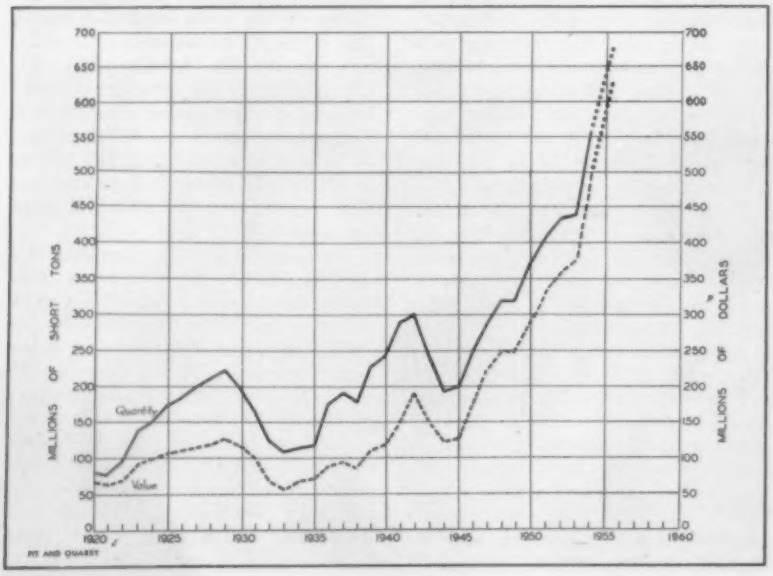
By sections, the following percentages of increase in sand prices were reported—North Central, 1 percent (to $.93); Northeast, 2 percent (to $1.17); Southwest, 10 percent (to $1.29); West, 4 percent (to $1.39); while the Southeast held steady at $1.00.

Gravel prices in the North Central and Southeast sections rose 4 percent, it was reported, to $1.24 and $1.35, respectively. The Southwest reported the highest increase, of 20 percent, to $1.70; while the West was up 7 percent to $1.45 and the Northeast up 2 percent to $1.47.

Wages Increased labor costs were an expected factor in the overall picture, and the steady climb of this cost item is shown in the 6 percent average increase for the country. In 1956, the average wage figure based on answering producers' forms was $1.83 per hour.

As previously, the West carried the highest average, at $2.23—a 3 percent rise. This was followed by the Northeast at $2.04—up 9 percent; North Central with $1.75—a 5 percent rise; Southeast at $1.34—up 10 percent; and Southwest at $1.26 —up 9 percent.

Production of sand and gravel in the United States, 1920-1956 (includes both commercial and non-commercial operations). Data through 1954 is adapted from latest Bureau of Mines publications and the preliminary report of the Bureau of the Census on 1954. Figures for 1955 and 1956 represent estimates made by Pit and Quarry on the basis of replies to our annual questionnaire survey.



With an average of 55 employees per answering company, the Southwest led in the employment data. In order of rank, the average for the other sections was—North Central, 35; Southeast, 29; Northeast, 26; and West, 15 per company.

Outlook A forecast of industry activity during the coming year must of necessity take into consideration the proposals of the producers themselves. On that basis, a record breaking tonnage of more than 650,000,000 tons gains credence.

A review of the survey returns shows that at least 42 percent of the companies answering expect this further increase to materialize, and 18 percent are taking steps to bring the gain to fruition by planning expansion. The average gain expected was 18 percent.

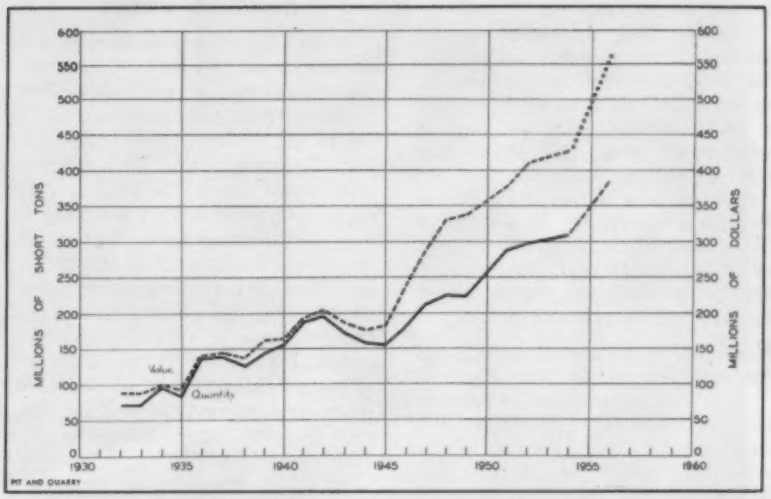
Among those companies planning expansion, 17 percent indicated the addition of new pit equipment, 22 percent planned to add plant processing equipment, 16 and 20 percent, respectively, propose to revamp existing pit and plant operations, and 7 percent report that new plants will be built.

While optimism is high in all sections, the greatest gain was estimated by producers in the Southwest who predict an increase of 57 percent. In the other sections, increases of 42 percent—North Central, 30 percent—Northeast, 40 percent—Southeast, and 50 percent—West, were indicated.

Among those operators (3 percent) who hold that a decline will be experienced during the coming year, the greatest proportion were also in the Southwest. The degree of drop estimated was about equal to predicted gain, or 17 percent.

Undoubtedly the road program has loomed large in the consideration of this year's activities by the producers surveyed. In answer to a question concerning the possible effect of road building on individual operations, 31 percent of the operators indicated that the program would cause them to expand.

The average expansion proposed was 41 percent, and by section was: North Central—42 percent, Northeast—64 percent, Southeast—20 percent, Southwest—25 percent, and West—26 percent. Further, 13 percent of the companies surveyed indicated that they would erect new plants to meet highway aggregate demands in their areas.



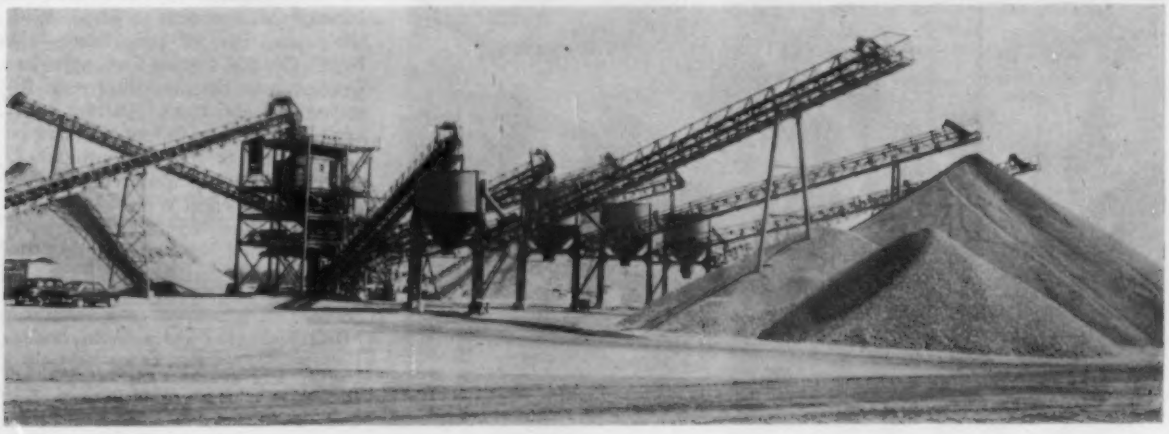
Production of stone (including crushed, broken, and dimension) in the United States, 1932-1956 (includes both commercial and non-commercial operations). Figures for 1932-1954 are based on latest Bureau of Mines data and the preliminary report of the Bureau of the Census for 1954, while those for 1955 and 1956 are based on replies to the latest questionnaire survey.

1954 Statistics As stated previously, sand and gravel production in 1954 totaled 560,828,000 short tons (commercial and non-commercial) as reported by the Bureau of Mines. The output was 27 percent greater (also explained earlier) than in 1953, and the value, at $504,127,000, represented a gain of 34 percent.

Approximately 71 percent of the total was accounted for by commercial operations, and the remainder by non-commercial government-contractor operations.

With more than twice the output of any other state, California was again the leading producer and supplied 70,500,000 tons—nearly 13 percent of the total. Michigan followed with 32,000,000 tons, or about 6 percent, and the others of the top ten producers in order of rank were New York, Texas, Ohio, Illinois, Wisconsin, Minnesota, South Dakota, and Washington.

Of the 396,933,000 short tons produced by commercial operators in 1955, about 48 percent, or 189,269,000 tons were used in building, and 161,899,000 tons, or 41 percent, consumed in paving. The former category experienced a gain of about 2



Screening, storage, and loading facilities at the new Lytle Creek sand and gravel plant of Service Rock Corporation, Compton, Calif.

percent over 1953.

During 1954, approximately 89 percent of the commercial production was reported as washed or screened and sold at an average value of $1.11 per ton. Average value of unprocessed sand and gravel was $.58 per ton.

A breakdown of transportation information shows that 77 percent of the production in 1954 was shipped by truck, 14 percent by rail, and 5 percent by waterway. Shipments of the balance were unspecified.

N.S.G.A. Survey In the annual survey conducted by the National Sand and Gravel Association covering 1955, questionnaires were returned by 565 companies who reported a production of 205,553,873 tons from 909 plants. The report of the survey and its results were reviewed in an earlier issue of PIT AND QUARRY (July, 1956, p. 193).

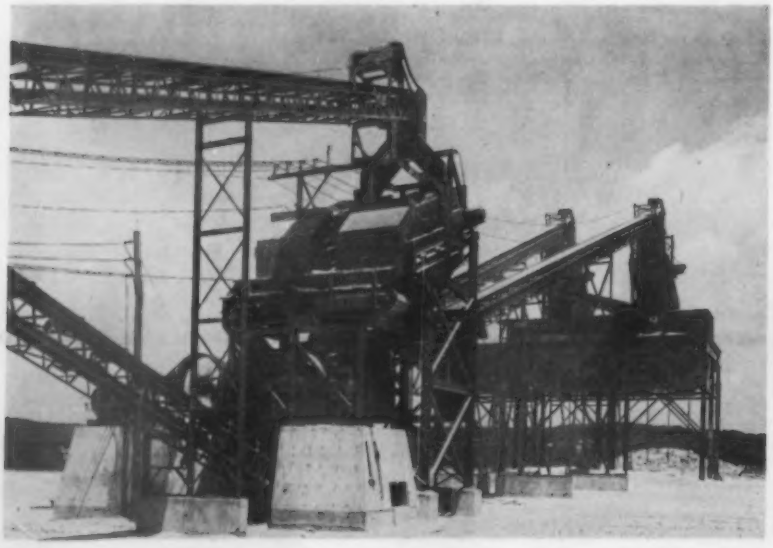
CRUSHED STONE

In this survey a year ago, it was estimated—on the basis of information submitted by producers—that crushed stone production in 1954 would approximate 313,000,000 tons. Apparently that estimate was quite sound in view of the data prepared and published in the preliminary 1954 Census report. In the latter, it was indicated that the industry classification primarily engaged in mining or quarrying crushed and broken stone accounted for shipments of 283,000,000 tons. This figure is exclusive of cement and lime plant consumption, as well as noncommercial (government-contractor) operations.

In view of Bureau of Mines reports which show approximately 90 percent of all production to be commercial in origin, the estimate for 1954 reconciles with the Census report which furnishes a firm base for projection. While the operators last year indicated that only a nominal percent of increase was expected during 1955, their experience apparently showed otherwise and the production data submitted illustrates a gain of 13 percent. Accordingly, the production in 1955 would be in the neighborhood of 350,000,000 tons.

Operators' estimates furnished for the full year of 1956 (returned in November), along with their average estimate of expected gain over the preceding year, indicate that an overall production of 365,000,000 may have been attained. In support of that possibility is the fact that all sections of the country report an increase during the past year—by section the gain expected was indicated as: North Central—1 percent; Northeast—5 percent; Southeast—1 percent; Southwest—22 percent; and West—12 percent, for a nationwide average of 5 percent.

A portable crushing and screening plant of the Dillon Stone Company, Columbus Junction, Ia., who supplied part of the aggregates required in construction of the new Kansas Turnpike.



Primary screens and secondary crusher (foreground), and secondary screens above loading bins (background), at the new crushed stone plant of McDonough Bros. near San Antonio, Tex.

Hourly Capacity Based on information submitted by producers, the general hourly plant capacity showed another gain of 7 percent over the same period of the preceding year. Increases by section were reported as follows: North Central—4 percent to 127 t.p.h.; Northeast—4 percent to 220 t.p.h.; Southeast—5 percent to 110 t.p.h.; Southwest—15 percent to 180 t.p.h.; and West—4 percent to 180 t.p.h.

On a national average, plants were reported to be in operation 10.3 months out of the year. This proved to be only slightly longer than the average period of operation in the sand and gravel industry. Average periods by section were: Northeast—10 months; North Central—10; Southeast—10.8; Southwest—10.1; and West—9 months.

Selling Price Value per ton reported by the operators shows, on a countrywide average, an increase of 3 percent to $1.63. With the exception of one area—the North Central section—selling prices were up over the preceding year. Increase by section and current average price were as follows: Northeast—1 percent to $2.19; Southeast—2 percent to $1.73; Southwest—7 percent to $1.29; and West—24 percent to $1.81. The North Central average remained the same during the past two years at $1.44.

A section of the new Kansas Turnpike for which a large part of required aggregates was supplied by portable crushing and screening plants.

Wages The upward trend in hourly wages for the past few years was continued during 1956, and shows a national average of 5 percent above the preceding year. The current hourly figure is now reported as $1.57. As reported by the various sections hourly rates were: North Central—$1.60; Northwest—$1.57; Southeast—$1.30; Southwest—$1.34; and West—$2.17.

The overall average number of employees per company took a substantial rise according to producers' reports, and in 1956 was shown to be 49 men. All sections reported a higher average number of employees than in 1955—the figures furnished were: North Central—40; Northeast—61; Southeast—53; Southwest—76; and West—50 men.

Outlook In paralleling the favorable outlook held by the sand and gravel producers, a similar conclusion may be drawn in considering the future ahead of the crushed stone industry. Optimism concerning activity during the coming year takes root in the fact that 32 percent of all answering companies expect to realize further gains—ranging from 16 to 41 percent. Only two percent of those surveyed anticipated a drop this year, while 40 percent predicted that their operations would remain at least on the present high level.

Among those expecting greater production, the average increase reported by section was: North Central—27 percent; Northeast—16 percent; Southeast—19 percent; Southwest—41 percent; and West—36 percent. As in the case of the sand and gravel producers, the new highway program was expected to play a large part in future plans of the crushed stone operators.

Lending emphasis to the above is the indication by 28 percent of the crushed stone companies that the road activity would cause them to expand capacities. The average over the country of expansion expected was 53 percent. By section, the estimates ranged from 16 to 66 percent. With the road program in mind, 7 percent of the answering operators indicate that they will erect new plants to meet demands.

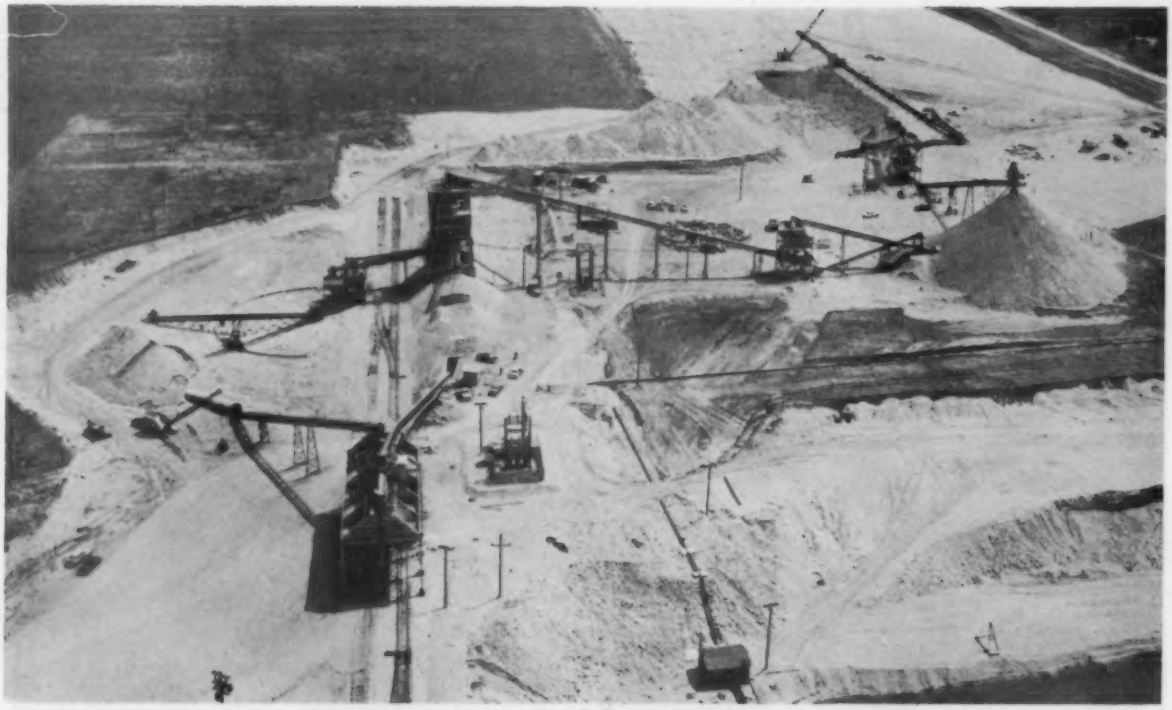
Along the same lines, 18 percent of the producers contemplate revamping existing pit operations and equipment to expand capacity, while approximately the same number plan to revise and enlarge present plant flow and processing units.

Although the highway program was offered most frequently in explanation of expansion and increases expected during this year, other factors indicated included more local construction, diversification of products, improvement in processing methods, and less labor difficulty.

AGRICULTURAL LIMESTONE

The most recent full-year figures available at this time covering the use of agricultural limestone have been compiled for 1955. These, along with background information from authoritative sources within the industry, provide a background for a review of this commodity over the past two years.

At this time last year, a slowing of the downward trend was indicated by the 1954 production which, although a 15 percent drop from 1953 had been estimated, was less than 9 percent under the preceding year. This encouraging development was amplified during 1955 when the 20,658,609 tons produced and used provided a gain of nearly 9 percent over 1954, and was actually a few thousand tons over the 1953 figure. The 1955 tonnage shown is



An aerial view of the new sand and gravel operation of Consumers Co. near Crystal Lake, Ill., shortly after pit operations were initiated.

just 3 percent higher than the estimate furnished to Pit & Quarry that appeared in last year's forecast.

Among the factors accounting for the gain is the fact that 28 of the 42 states reporting on agstone useage show increases ranging from 2 to 113 percent, while the remaining states show drops of 3 to 32 percent. However, this latter group accounted for only 2,477,835 tons, or just 12 percent of the total, and only 8 of the 14 reported use in excess of 100,000 tons annually. In addition, each of the states that had reported the greatest drop in the preceding year (Michigan, Oklahoma, Rhode Island, Tennessee, and Washington) showed an increase during 1955.

With the above points in consideration, industry sources appear confident that 1956 will at least equal the improvement experienced during the previous year and may result in the comsumption of approximately 21,000,000 tons. A forecast for 1957 is necessarily tenuous in view of the uncertainty as to the effect of many factors, including the extent of state participation in various government programs. If these are fully utilized, the possible increase in 1957 may raise current figures by another 1,000,000 tons.

In 1955, Illinois maintained its previous position as the leading agricultural limestone consuming state with 2,671,358 tons, or 13 percent of the total. Indiana replaced Missouri for second place with 2,325,579 tons, or 11 percent. The remaining states among the top ten, by order of rank, were Missouri—2,051,413 tons, 10 percent; Ohio—2,043,368 tons, 10 percent; Iowa—1,760,100 tons, 8 percent; Kentucky—1,316,484 tons, 6 percent; Wisconsin—1,310,310 tons, 6 percent; Pennsylvania—893,659 tons, 4 percent; New York—677,924 tons, 3 percent; and Virginia—520,500 tons, or 3 percent.

This agstone plant is part of the recently expanded operations of Quality Limestone Products, Sussex, Wis.

SLAG

According to statistics compiled from a canvass cooperatively conducted by the Bureau of Mines and the National Slag Association, the production of iron blast-furnace slag in 1955 established new records for this commodity. The 32,438,017 short tons produced and valued at $46,308,000, represent gains of 11 percent and 17 percent respectively over the 1954 production and value. Further, the 1953 record was broken by 6 percent with respect to production.

Statistics in support of the above information include the production figures of 45 companies operating 68 plants that process air-cooled slag,

15 plants that process granulated slag, and 20 plants producing expanded slag.

By types, the breakdown of total output shows that screened air-cooled slag accounted for 77 percent; unscreened air-cooled, 2 percent; granulated, 12 percent; and expanded, 9 percent. These percentages reflect virtually the same ratios as in the preceding two years. In each category, an increase was shown over the figure for 1954.

Of the major product, screened air-cooled slag, 90 percent or 22,436,000 short tons was used in the following categories (by order of rank): highway and airport construction, other than in Portland cement and bituminous concretes; bituminous construction, all types; railroad ballast; Portland cement concrete construction; and concrete block production.

About 91 percent of the unscreened air cooled slag was consumed in highway and airport construction, while in the case of granulated and expanded slags, the primary uses were in the manufacture of hydraulic cement and for concrete block aggregates, respectively.

Among the 15 states in which slag is produced, the three leaders in 1955, as previously, were Ohio with 24 percent, Pennsylvania with 22 percent, and Alabama with 17 percent of the total. The remaining 37 percent is supplied by California, Colorado, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, Tennessee, Texas, and West Virginia.

Approximately 60 percent of the total tonnage during the year was shipped by truck. Rail and waterway shipments amounted to 37 and 3 percent respectively.

According to industry sources the slag industry has reached the point where practically all the slag produced in the furnaces is processed for commercial aggregates. Accordingly, it is expected that 1956 production will record a slight decrease from the preceding year due to the steel strike during the summer of last year. Since slag output will vary directly with production of pig iron, it has been estimated that a high, if reached, next year will be approximately 10 percent greater than in 1955.

LIGHTWEIGHT AGGREGATE

In view of the information and reactions obtained from various sources within the industry, the steady growth of the lightweight aggregate industry recorded in recent years continued unabated through 1956. This reflects the obvious parallel to the increasing demand on concrete and concrete products industries.

An overall view of Hydraulic-Press Brick's rebuilt and enlarged expanded shale plant near Cleveland, Ohio.

A companion survey of block producers, discussed in the Concrete Manufacturer section of this issue, indicates that lightweight units (8-in. equivalents) accounted for approximately 51 percent of the total concrete block production in 1956—about the same as in the preceding year. On that basis, over 1,100,000,000 of the lighter units were manufactured. As a further indication of the growth in consumption of lightweight aggregates, 70 percent of those block producers reporting on the survey indicated use of these materials.

While the yield in masonry units from one cu. yd. of lightweight aggregates varies in accordance with the different types of material used, a reasonable average—and one determined from data submitted by surveyed block manufacturers—is about 61 blocks (8-in. equivalents). Using that average, the concrete block industry alone accounted for an estimated 18,000,000 cu. yd. of lightweight aggregates. In addition, over 2,000,000 cu. yd. were consumed in the production of lightweight aggregate ready-mix concrete, it is estimated.

Although the above performance is down slightly from the record set in 1955, the small decrease is considered largely due to a drop in new home starts during the past year, and producers expect to take up the slack and even more during the coming year. These reactions, and production data by regions showing percentages of block output in which the various lightweight aggregates are used, are presented in the accompanying survey and therefor not repeated here.

Expanded Slag Although the 1954 expanded slag production of 2,599,112 short tons as reported by the Bureau of Mines surpassed the previous record (in 1953) by 14 percent, output in 1955 of 2,891,844 tons represents a further gain of 11 percent. At $7,961,466, the value was up 28 percent.

Approximately 95 percent of this material was consumed as aggregates in the manufacture of lightweight concrete block, and the balance as aggregate in lightweight concrete construction. As a corallary to the expanded output of lightweight blocks and the growing use of prestressed lightweight concrete among other types of construction, it is anticipated that the 13 and 14 percent gains in these two categories may well have been repeated in 1956, and will carry on into next year.

Perlite Sales of perlite in 1955, on the basis of industry-supplied data, reached an all-time high of more than 220,000 tons. This topped the 1954 record by about 12 percent. Preliminary estimates for 1956 on the output of this expanded volcanic lava indicate a production from 84 plants in 30 states of about 270,000 short tons. If realized, this 9 percent gain over 1955 would set a new industry record. Experience in the past two years leads to the prediction within the industry that a 300,000 ton output is within reach in 1957.

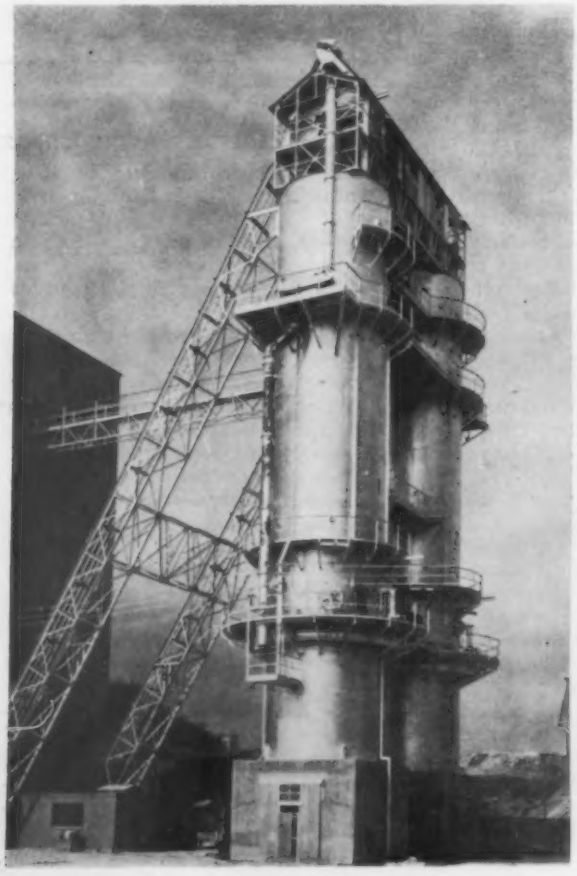
Factors contributing to this record growth include the growing popularity of perlite insulating concrete in lightweight roof deck construction, increases in its use as a component in wallboards and acoustical materials, greater consumption in the making of lightweight, fire-resistant plaster ,and in the rising demand for the material as a plant rooting medium and soil conditioner.

Nonmetallics Maintain Vigorous Activity

By BUREN C. HEROD

WITH the exception of a very few commodities, the production picture of nonmetallic minerals — exclusive of aggregates and cement—was very favorable in the varying periods reported on for 1956 and the full year of 1955, by the U.S. Bureau of Mines. Not only have many commodities maintained the high output levels attained in the preceding two years, but many have gone on to new production peaks. In addition, many minerals that were experiencing a downward trend in 1954 enjoyed a sharp reversal of that trend. In those instances where output was lower, the figures reported were still near previous records attained.

It seems probable that peaks established by some industries in 1955 will be surpassed. In the case of lime, a new record is within reach despite the slowdown caused by a six-week steel strike in mid-year. Gypsum and sulphur are among other minerals that should set new high levels, according to Bureau of Mines preliminary data and industry opinion.



Erected as twin units, these large shaft lime kilns at Ash Grove's Galloway plant stand 128 ft. high. Charging skip inclines and kiln feed bunkers are seen at the left.

Although final figures are not available for 1956 on any commodities, the latest quarterly Bureau of Mines reports at hand are taken into consideration in the following review, along with all the final 1955 statistics that have been prepared. In addition, the 1954 Bureau of the Census reports lend validity to the figures presented, since these reports, which provide the first base year data since 1939, furnish a sound point of departure for subsequent estimates. (This also applies to the aggregates review elsewhere in this issue.)

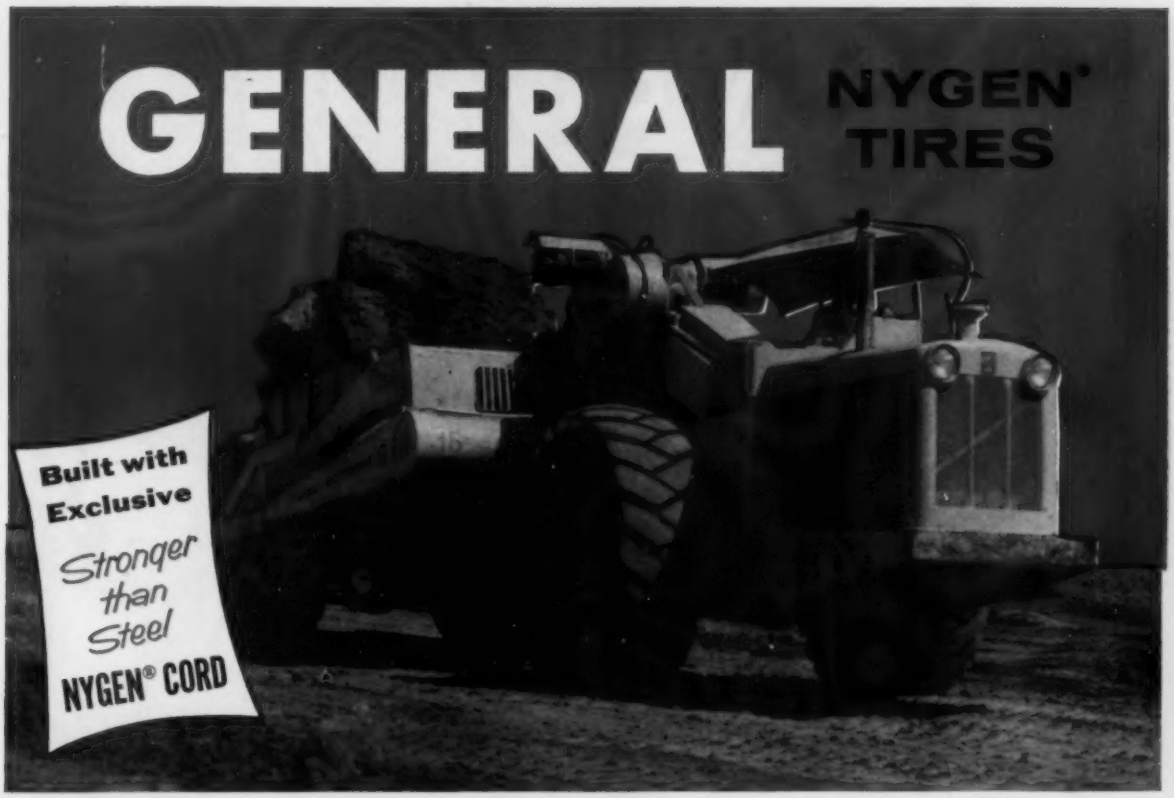
Tabulations of tonnage have been completed for a part of 1956 on several minerals, including lime—eight months, gypsum—nine months, sulphur—nine months, fluorspar—six months, and bauxite—six months. Along with these figures, data supplied by various industry sources have been evaluated in preparing estimates covering the situation in 1956, as well as in consideration of the outlook for the coming year.

Partial 1956 production figures on hand at this time underline the possibility that lime may well have reached a new peak in the last year in attaining an open-market output of about 9,300,000 tons. This would be an increase of about 1 percent over the record output of 1955.

Repeating its performance of the preceding year, gypsum, in the second quarter of 1956 set a new high for any quarterly period in the history of the industry. Should the rate of increase hold for the balance of the year, another peak — in the neighborhood of 11,500,000 short tons—will be established.

(*Continued on page* 395)

GENERAL NYGEN® TIRES



...Designed to stand up where others let down!

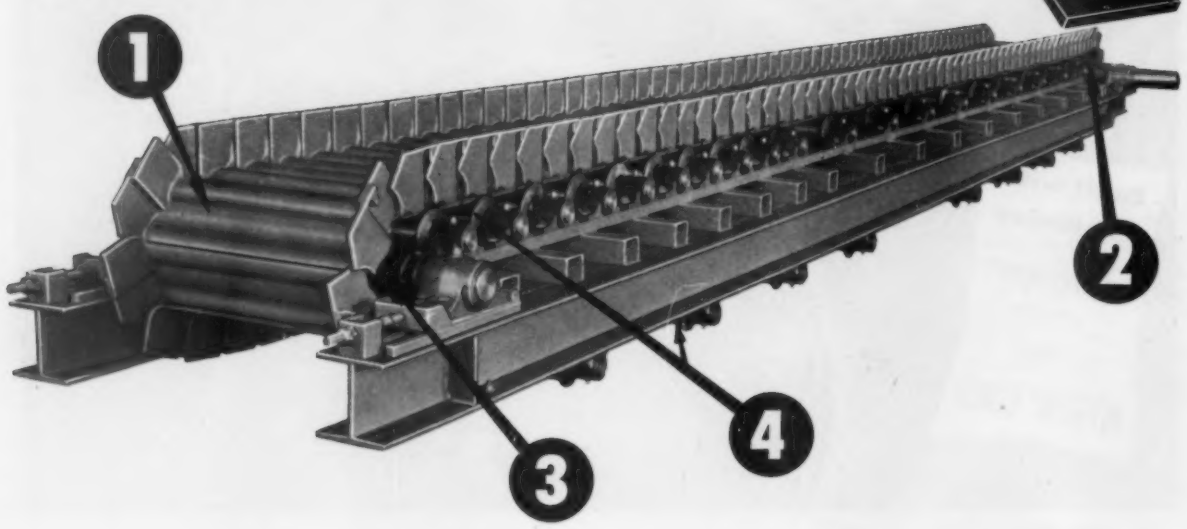
Unsurpassed for ruggedness, strength and dependability, General Truck Tires deliver the maximum in profitable performance. From the big, new All-Duty LCM with extra wide treads for tractor-like drive and flotation, to the rough, tough HCT Logger, the General Truck Tire performs better because *it's built better!* You'll get the job done faster and for more profit when you switch your equipment over to Generals.

specify GENERALS on your new equipment

THE GENERAL TRUCK TIRE

THE GENERAL TIRE & RUBBER CO., Akron, Ohio

WHERE WEAR COUNTS!



TISCO® PAN FEEDERS

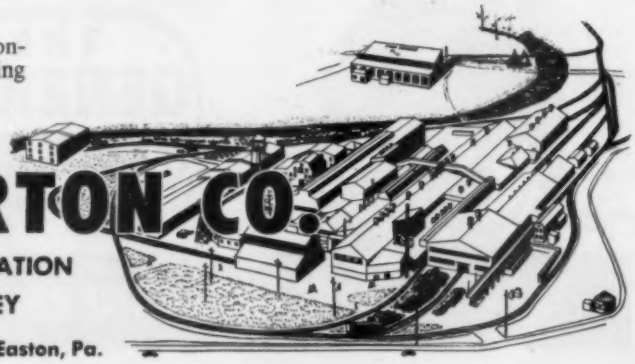
❶ **FEEDER PANS** — Hammered by tons of heavy rocks and ore every minute, but tough TISCO Manganese Chrome Steel pans lick impact and abrasion, outwear ordinary pan feeders 5 to 1.

❷ **HEAD SPROCKETS** — One break-down here flattens production. For dependable durability Manganese Steel does the job.

❸ **IDLERS** — Manganese Steel in this vital part keeps idlers busy, smooth running.

❹ **ROLLERS** — When each roller must continually shake off shocks and abrasion nothing wears like Manganese Steel.

Picture tons of heavy, abrasive material smashing down on this TAYLOR-WHARTON Pan Feeder, month after month without a breakdown. The reason — tough TISCO Manganese Steel soaks up shock and abrasion, keeps production climbing, maintenance down. For further information write to:



TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

HIGH BRIDGE 3, NEW JERSEY

Cincinnati, O. — Birmingham, Ala. — Easton, Pa.

THESE '57 CHEVIES TURNED THE TOUGH ALCAN HIGHWAY INTO A TURNPIKE!

They took the "teeth" out of North America's toughest truck run in an amazing display of stamina and dependability! The Chevrolet Alcan test called for great truck components . . . and here they are, the same modern features you'll get in *your* '57 Chevy!

Modern high-compression 6's—a time-proved Chevrolet truck 6 made the tortuous Alcan Highway test look easy . . . registered a high 18.17 miles per gallon!

Short-stroke V8 power—with the shortest stroke of any truck V8's, new Chevy engines stand first in their field for efficient load-pulling! Their great performance in Alaska proved it!

Safe, sure brakes now Alcan proved—in medium-duty models, Hydrovac power brakes* supply up to 85% of the braking effort! Powerful Air-Hydraulic brakes* gave peak stopping power in heavy-duty models!

Unit-design cab and body construction—Chevrolet truck cabs and bodies remained tight and solid on Alcan bumps, showed that they're built to *last!*

Rugged Synchro-Mesh manual transmissions—they displayed never-say-die durability . . . came through with smooth, flexible, trouble-free performance!

*Revolutionary Powermatic transmission**—Drivers of heavy-duty models reported shift-free driving ease on Yukon grades, safer downhill hauling with the hydraulic retarder!

Sturdy frames and long-leaf springs—these brawny chassis components proved they can take it when the going is roughest . . . took the Alcan's worst with strength to spare!

These Alcan-proved Task-Force 57 features and others like them (such as extra-heavy rear axles, mighty Triple-Torque tandem options, and new, improved tubeless tires) are ready to tame your tough truck runs too! Boost your hauling profits by seeing your Chevrolet dealer soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Optional at extra cost.*

1957 CHEVROLET TASK·FORCE TRUCKS

PROVED ON THE ALCAN HIGHWAY . . . CHAMPS OF EVERY WEIGHT CLASS! CHEVROLET

Longer tandem life

One of 9 reasons why you'll find International Trucks cost least to own!

In any off-highway truck operation, you need a tandem and other major components built to stand up and take it, to keep costs way down.

And cost records prove* that over the years International Trucks cost *least* to own!

The reason is simply this: It is International policy to build trucks that do the job better, do it longer at lower cost than any other make—International spends more to build the truck so it costs you *least* to own.

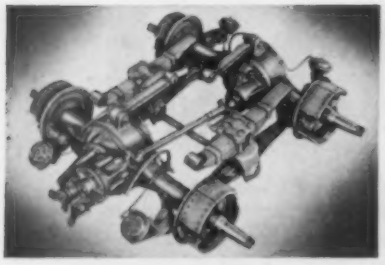
That's why there are more owners of Internationals than any other 6-wheel truck, and have been for the past 21 years!

The way to trim your trucking costs is to get together with your International Dealer, today. He's right at the other end of your phone.

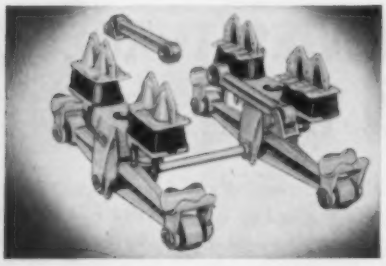
**Signed statements in our files, from fleet operators throughout the U.S., back up this statement.*

INTERNATIONAL HARVESTER COMPANY, CHICAGO

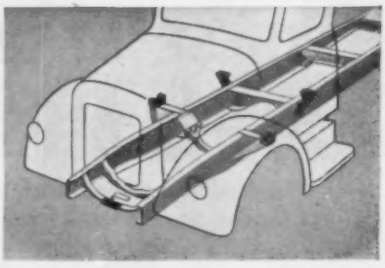
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors



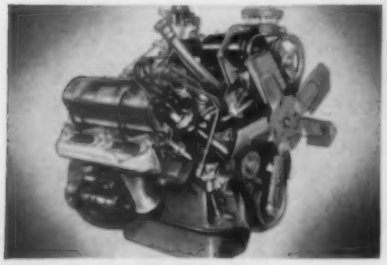
1 All International tandems give longer, more dependable life. This unit has rubber bushings at all 10 oscillating points to reduce maintenance and lengthen life. Third differential with lock transmits power smoothly and evenly to each axle.



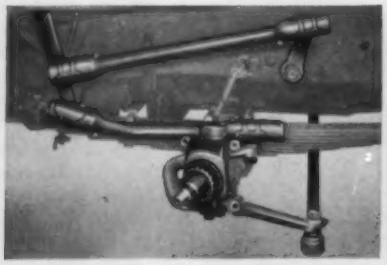
2 Lightweight suspension with rubber load cushions provide soft, easy riding, empty and loaded. Cushions reduce truck weight and servicing. Optional aluminum walking beams, spring saddles and wheels increase payloads more than 500 pounds.



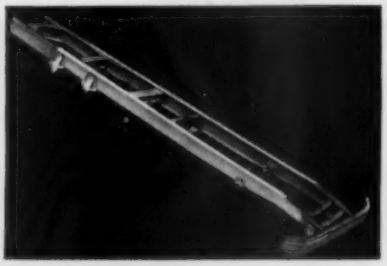
3 For cab comfort and long life. Quiet, level ride without transmitting stress to cab, fenders, hood or radiator. It's the result of wide spaced, rear shackle type mountings in an exclusive International 5-point rubber-insulated V-8 cab suspension.



4 Most powerful, most economical V-8's under any truck hood—206, 226 and 257 hp. Responsive power that gets your loads moving *fast*, keeps them moving. More miles per gallon of gas. Other gasoline, LPG and diesel engines up to 356 hp.



5 True geometric steering provides easier handling, outstanding maneuverability with short turning circles. Gears are cam and roller mounted twin lever type. Controls mounted *ahead* of the front axle. Steering wheel is comfortably positioned.

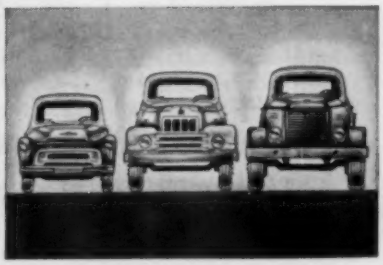


6 Steel-Flex frames combine great strength with flexibility. Heavy-duty construction plus reinforced crossmembers with husky gussets provide for proper tandem suspension. Inverted L-type reinforcements give full load-length support.

International builds six-wheel models from 22,000 lbs. GVW to 76,800 lbs. GCW in conventional and COE design. There is one practically custom built for your job. Engines range in sizes up to 1091 cu. in.—famous sixes and three great new V-8's. Complete selection of all-wheel-drive models also available to make the toughest going easy. You name the job, International has exactly the right truck for it—the truck that costs you *least* to own.

7 New "silent spin" center bearings have quiet, tapered roller bearings. Prelubricated, sealed and shielded for long, trouble-free operation. Self-aligning, wide spaced rubber mountings dampen noise and vibration, eliminate service.

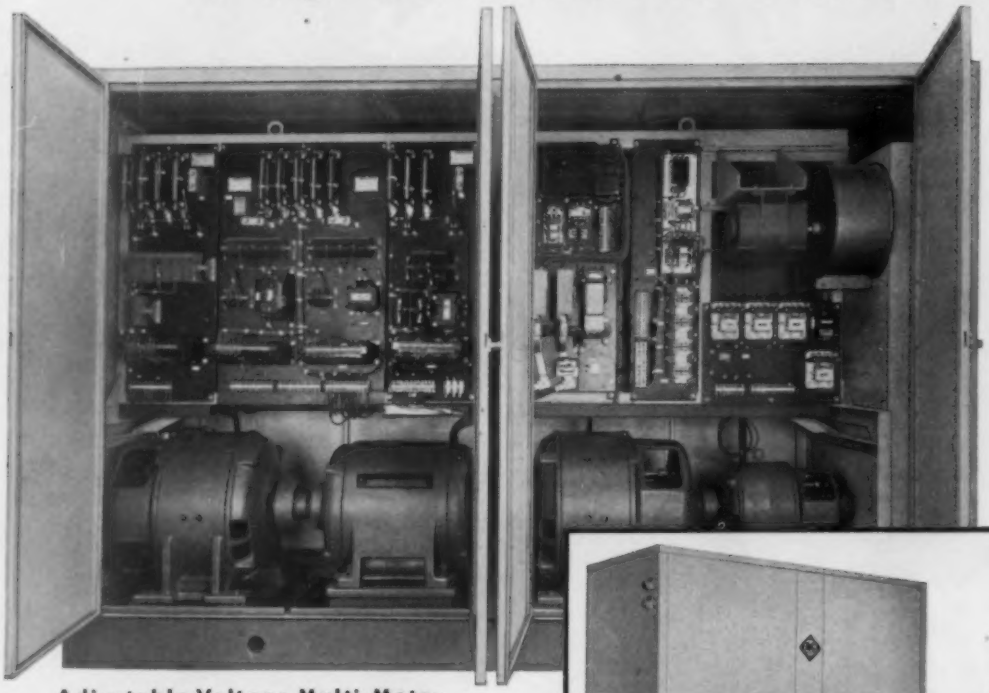
8 All-wheel-drive models have the extra traction and pull needed for all tough, off-highway operations. Completely factory-built, 7,000 to 43,000 lbs. GVW. Low height with ample ground clearance. Complete selection of equipment available.



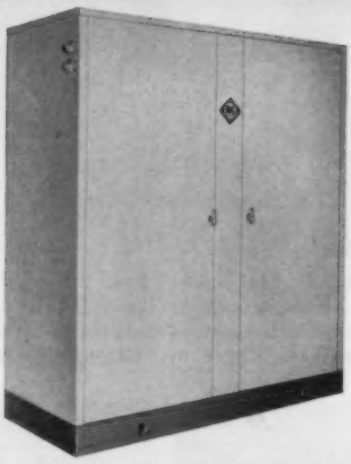
9 World's most complete line. There is an International "tailor-made" for every truck job, ½ tonners to 90,000 pounders. Choice of 4-wheel, 6-wheel and all-wheel-drive models, conventional and COE design. Every one built to cost *least* to own.

There's MORE dependable speed control

- high response
- high shock resistance
- no fragile parts
- no maintenance



Adjustable Voltage Multi-Motor Package Drive is ideal for many industrial applications. Self-ventilation keeps unit clean, minimizes maintenance.



Size 3 Adjustable Voltage Power Unit rated 30 hp, of standard construction. Magnetic amplifier excitation provided.

Every one of the design features of the Allis-Chalmers Adjustable Voltage Package Drive assures you an easy, dependable means of power conversion.

Key to Package Drive dependability is the use of a magnetic amplifier to excite the field of the power unit m-g set. Sturdy and simple, this amplifier has no moving parts to wear out . . . no fragile components to be affected by vibrations. AND — there's no wasteful "warm-up" time needed. At the turn of a dial, you get immediate speed control.

Cost-saving assembly

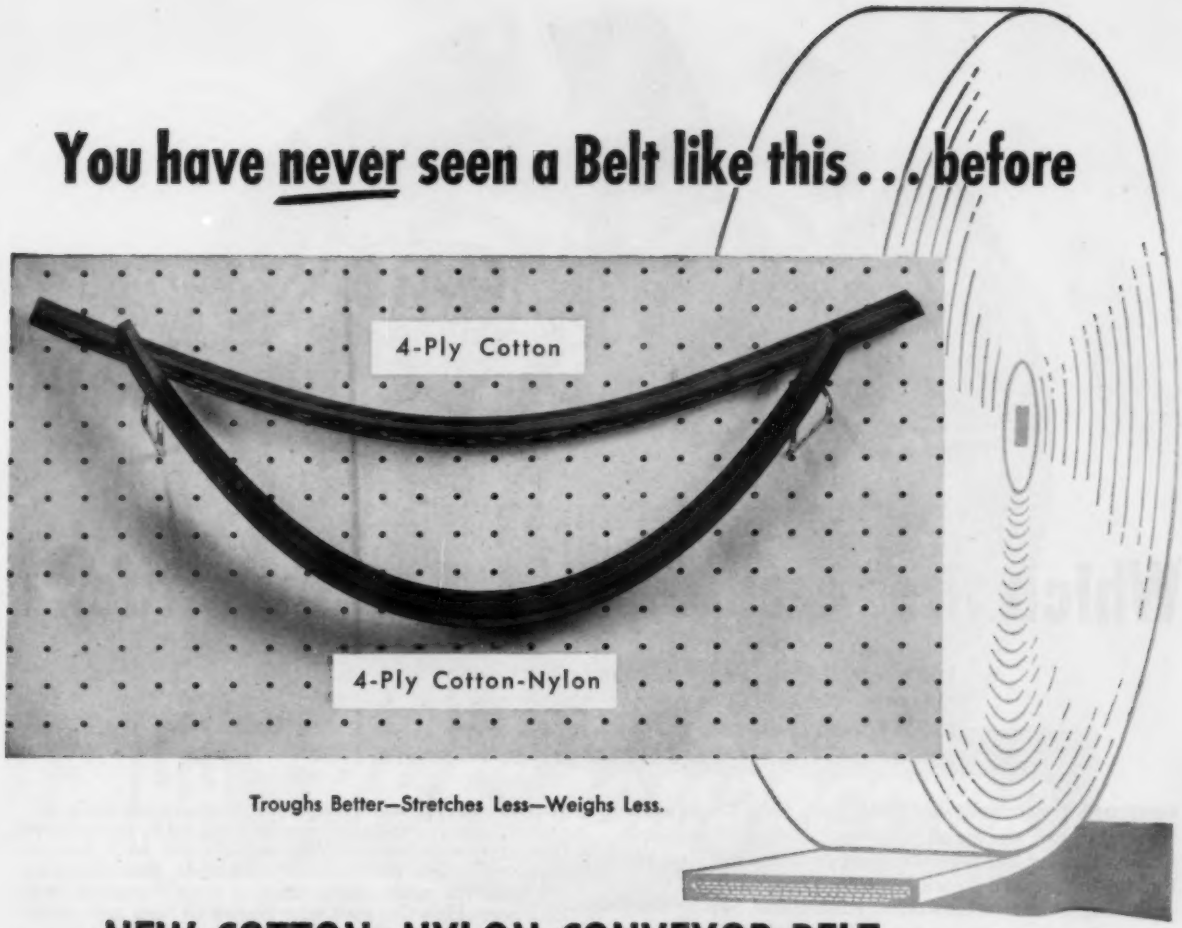
M-g set and control components are assembled in the power unit enclosure at the factory — saving you installation costs. Enclosures used for 30 through 200-hp units are completely collapsible and may be easily disassembled without loss of rigidity. Larger units have separately driven blowers to provide positive ventilation and pressure even when unit is idle.

Available in units from 5 to 200 hp, the package drive is ideal for any application requiring adjustable speed. Contact your nearby Allis-Chalmers sales office or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5270

You have never seen a Belt like this . . . before



Troughs Better—Stretches Less—Weighs Less.

NEW COTTON-NYLON CONVEYOR BELT

● Pictured above is a sample of a 4-ply cotton conveyor belt and a sample of the **new 4-ply cotton-nylon belt.** Both belts are designed to carry the same load.

Can you picture how a belt which will trough like this one would **improve your operation . . . plus the fact that it is lighter, has less stretch and will operate over smaller pulleys.**

The explanation is simple. Republic uses a fabric with cotton running **lengthwise** and nylon running **crosswise.** Nylon yarn of the same strength as cotton is thinner and more elastic. The nylon, running crosswise, will naturally make the belt trough better. In belts of equal plies and strength, the cotton-nylon belt will weigh approximately 25% less than the cotton duck carcass.

This fine new belt has a folded edge with rubber friction and covers of Republic's Super Excelo or Record Maker grades.

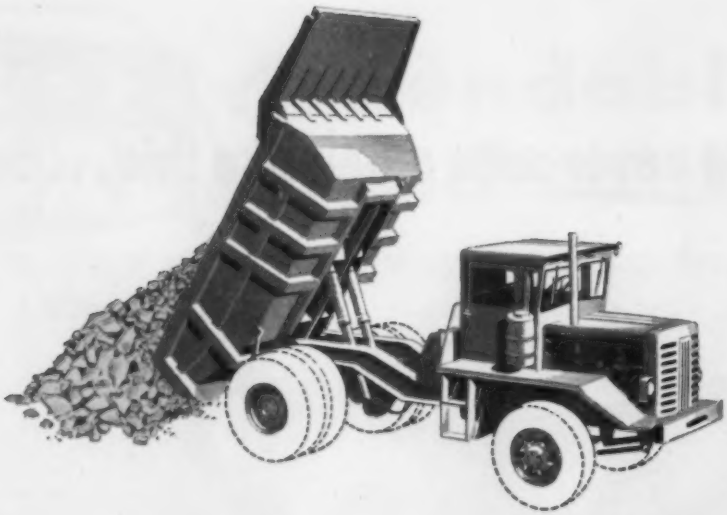
The original idea for the belt was to replace conventional cotton fabric belts where the bulk of the load did not have sufficient weight to trough a heavy belt. But, the flexibility and other qualities are extending the belt's use to many diversified applications.

Probably you have an application where cotton-nylon will be the most efficient for you. Take a look at your belting . . . **then write us for recommendations on how this cotton-nylon belt might do a better job for you.**

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS



Which tires would you put on this truck?

SITUATION: Excavating for highway between Bonne Terre and Halifax, Missouri, Clarkson Construction Co. trucks haul dolomite from 1,000-ft. long, 20-ft. deep cut to nearby fill. Terrain—rough, with steep 30° downgrade. Average load of 23.49 cu. yds. weighs 61,074 lbs.

FIRESTONE'S RECOMMENDATION: Rock Grip Excavators for dual drives withstand load shocks, ward off cuts and bruises. Angled treads prevent side slipping. Rib Excavators up front make steering easier. These tires are built with tough cut-resistant tread rubber and Safety Tensioned *Gum-Dipped*® nylon cord bodies for extra strength and impact resistance.

JOB RESULTS: Clarkson trucks operate 10 hrs. daily in 5-min. cycles. *No downtime has been caused by tire failures!* Operators express complete satisfaction with lowered costs and raised performance standards, directly resulting from the recommendations of their Firestone Sales Engineer. He's the man who knows all tires and understands how to use them best for your profit, too. Contact him today—through your local Firestone Dealer or Store.

SUPER TRANSPORT

Most widely used heavy-duty tire for long, low-cost highway performance.

SUPER ALL TRACTION

Rugged, deep treads for off-road traction; smooth highway operation.

ROCK GRIP EXCAVATOR

Toughest tire ever built for severe off-road service. It's cut-resistant too!

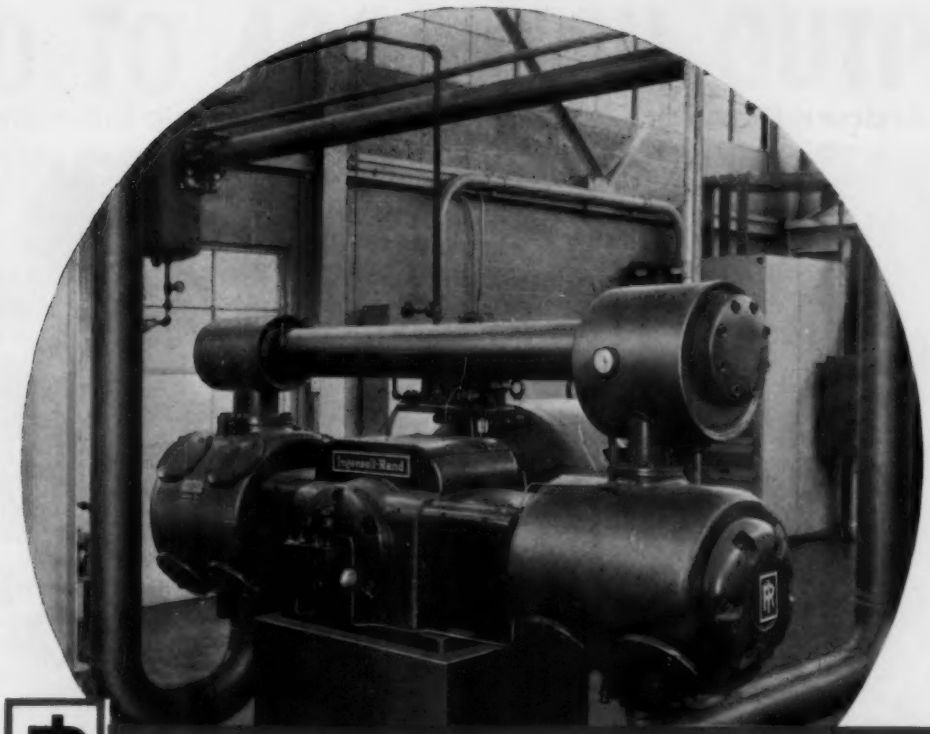
RIB EXCAVATOR

Rugged, thick-bodied tire with great lateral stability for easy steering action.

Firestone

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC

Copyright 1957, The Firestone Tire & Rubber Co.



"PHE" COMPRESSOR

serves growing plant-air load at Rotary Electric Steel Co.

WHEN the Rotary Electric Steel Company of Detroit, Mich., increased plant capacity, the existing plant-air supply was also increased by adding the Ingersoll-Rand 100-hp PHE compressor shown above. The extreme simplicity of this installation is obvious at a glance.

The main air supply consists of two Ingersoll-Rand duplex, electric-driven compressors totaling 500 hp. After serving for 40 years they are still giving entirely satisfactory performance.

The new PHE unit is a compact, packaged-type, two-stage air compressor with built-in motor and efficient intercooler. It was shipped completely assembled, ready to run. Installation was simply a matter of mounting the unit on a small foundation and connecting the air, water and power lines. And like many other modern Ingersoll-Rand compressors the PHE has full-floating aluminum bearings that need no adjustments.

Ask your I-R representative for full details on the smooth-running PHE compressor. Its inherent longevity and low maintenance requirements mean big savings in air power costs.

Only I-R Compressors have CHANNEL VALVES

Known the world over for High Efficiency • Quiet Operation
Durability • Air-Cushioned Action • Corrosion-Resistance
Freedom from Warping • Long, Trouble-Free Service

Ingersoll-Rand

1-430

11 Broadway, New York 4, N. Y.

COMPRESSORS • ROCK DRILLS • AIR & ELECTRIC TOOLS
GAS & DIESEL ENGINES • TURBO-BLOWERS • PUMPS

Gardner-Denver . . . Serving the World's Basic Industries

Gardner-Denver Air Trac®—this self-propelled crawler-mounted drill packs a punch in any terrain. The Air Trac is self-stabilizing, fast drilling.

Gardner-Denver Rotary 600—continuous and reliable air power in any weather . . . at any altitude. Extra easy to maintain in the field. Easy on fuel.

Quarry Operators say:

"Rugged jobs were made for Gardner-Denver"

Gardner-Denver wagon drills—they're hard hitting, mobile, easily positioned for accurate hole-spotting. Readily handle angle holes, toe holes, line drilling.

Gardner-Denver S48—fast-drilling sinker.

GARDNER-DENVER Since 1859 K KELLER TOOLS

GARDNER-DENVER

THE QUALITY LEADER IN COMPRESSORS, PUMPS, ROCK DRILLS AND AIR TOOLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

40 TO 400 MESH OUTPUT UPPED AS MUCH AS 300%

ENGINEERING AIR SEPARATORS TO SPECIFICATION

. . . comes naturally to Sturtevant engineers. They have a tradition of success in developing dry-processing equipment and plants for more than 75 years — from the first rock emery mills to the most modern fluid jet micron-grinding equipment. If your problems include any of the processes listed in the coupon, it will pay you to investigate.

WHAT CAN A STURTEVANT AIR SEPARATOR DO IN YOUR PULVERIZING SYSTEM?

In the cement industry, Sturtevant Air Separators have a tested record of increasing mill capacities from 25 to 300% while lowering power consumption as much as 50% — when used in closed circuit with grinding mills. Maybe they can do as well for you.

Easily adaptable to your materials. Sizes of Sturtevant Air Separators range from 3 to 18 feet in diameter. They deliver fines from 40 to 400 mesh at rates as high as 100 tons per hour.

Designed to cut costs! Sturtevant Air Separators are built for a lifetime of low-downtime service. Rugged construction plus easy accessibility for quick maintenance (typified by the "OPEN-DOOR" design in other Sturtevant equipment) assures more output per machine-year. Check the coupon for more information.

STURTEVANT

Dry Processing Equipment

The "OPEN-DOOR" to *lower* operating costs over *more* years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS
BLENDERS • GRANULATORS • CONVEYORS • ELEVATORS

STURTEVANT MILL COMPANY, 104 Clayton Street, Boston 22, Mass.

Please send me your bulletin on Air Separators ☐
Also bulletins on machines for:

☐ CRUSHING ☐ GRINDING ☐ PULVERIZING
☐ MICRON-GRINDING ☐ SEPARATING ☐ BLENDING
☐ SUPERFINE SELECTING ☐ GRANULATING ☐ CONVEYING

My dry-process materials are:_____
Desired capacity is:_____
Name_____ Title_____
Firm_____
Street_____
City_____ Zone_____ State_____

this is Pure Limestone

Above is a section of a test core. The minimum of dark spots indicates top-grade limestone, ideal for chemical lime, calcium carbide and other important purposes.

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA ($S_i O_2$)	.36%	.30%	.34%
IRON OXIDE ($Fe_2 O_3$)	.072	.043	.049
ALUMINA ($A1_2 O_3$)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

. . . these are certified typical analyses by an independent research organization*

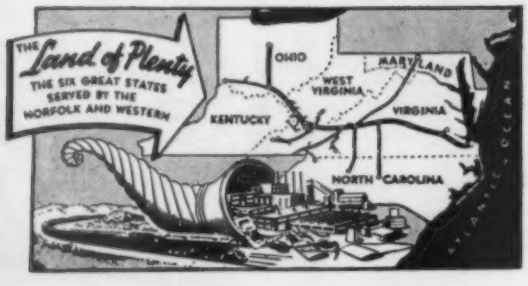
Along the Norfolk and Western, more than 100 million tons of premium-grade limestone are awaiting cement and chemical lime manufacturers. This vast quantity is ample to meet any foreseeable industrial demand!

Laboratory tests reveal that this limestone is more than 97.5 per cent pure, and some of the deposits range to an amazing 100 feet in thickness. The beds are so situated that they can be mined or quarried economically.

We invite you to confirm these scientific findings. Contact our plant location specialists for detailed information, which will be furnished to you promptly, in confidence and without obligation.

Write, Wire or Call—

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer PQ-745, (Phone 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia



Norfolk and Western RAILWAY

*** Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.**

Now despite skyrocketing costs...International gives you

...UP TO 24% MORE FOR YOUR POWER DOLLAR

IN 6 NEW CARBURETED POWER UNITS!

Your choice of fuel

International's adaptable design permits you to take advantage of your local fuel situation and select either gasoline, LPG or natural gas equipment in all six power units.

Now...you can get up to 24% more for your power dollar! International gives you this horsepower bonus, plus additional *new* savings on fuel, and *extra* life in six new, heavy-duty, 6-cylinder carbureted power units, from 68 to 133 net hp.

Horsepower increases and lower prices result from money-saving mass-production techniques unrivalled in the industry. Three of the power units, the U-264-6, U-308, and U-370 are *special* adaptations of heavy-duty International truck engines—proved for top *worry-free mileage*, and *record ton-mile economy!*

So, compare low first cost per working hp of these new International units with any other make. And compare such International *bonus* features as positive, unfailing lubrication through rifle-drilled oil passages... famous International valve-in-head operating efficiency ...power-smoothing, counter-balanced forged crankshafts ...and positive, "filter-clean" crankcase ventilation. Prove you'll get more dependable hp per dollar...more profits to depend on from every dollar you invest. Compare soon—see your International power unit distributor.

Brief Specifications (Gasoline)*

Model	Net hp and rpm	Max. torque lbs.-ft.	Displacement	Bore & Stroke
U-220	68 @ 2400	177	220.5	3 15/16 x 3 11/16
U-264-6	78 @ 2400	192	264.3	3 11/16 x 4 1/8
U-308	87.5 @ 2400	229.5	308.2	3 13/16 x 4 1/2
U-370	104 @ 2200	288	372	4 3/8 x 4 1/8
U-450	126 @ 2200	323	450.9	4 3/8 x 5
U-501	133 @ 2200	384	500	4 1/2 x 5 1/4

*Complete specifications and ratings on LPG and natural gas available on request.

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Crawler and Rubber-Tired Loaders... Off-Highway Trucks... Diesel and Carbureted Engines... Motor Trucks.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Company
180 North Michigan Avenue, Chicago 1, Illinois

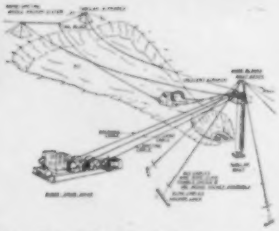
Increase Sand and Gravel Profits–Dig *and Haul* In One Operation With A SAUERMAN MACHINE

Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.

Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.

General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation

3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.



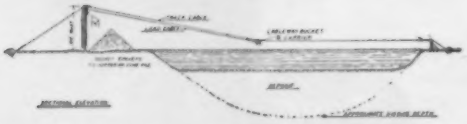
A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ⅓ to 15 yds. They can be worked over spans of 1000 ft.

Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.

Deep Digging, Underwater Recovery— Conveying to High Delivery Point



This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhauls at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

Sauerman Slackline Cableways range in size from ⅓ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.

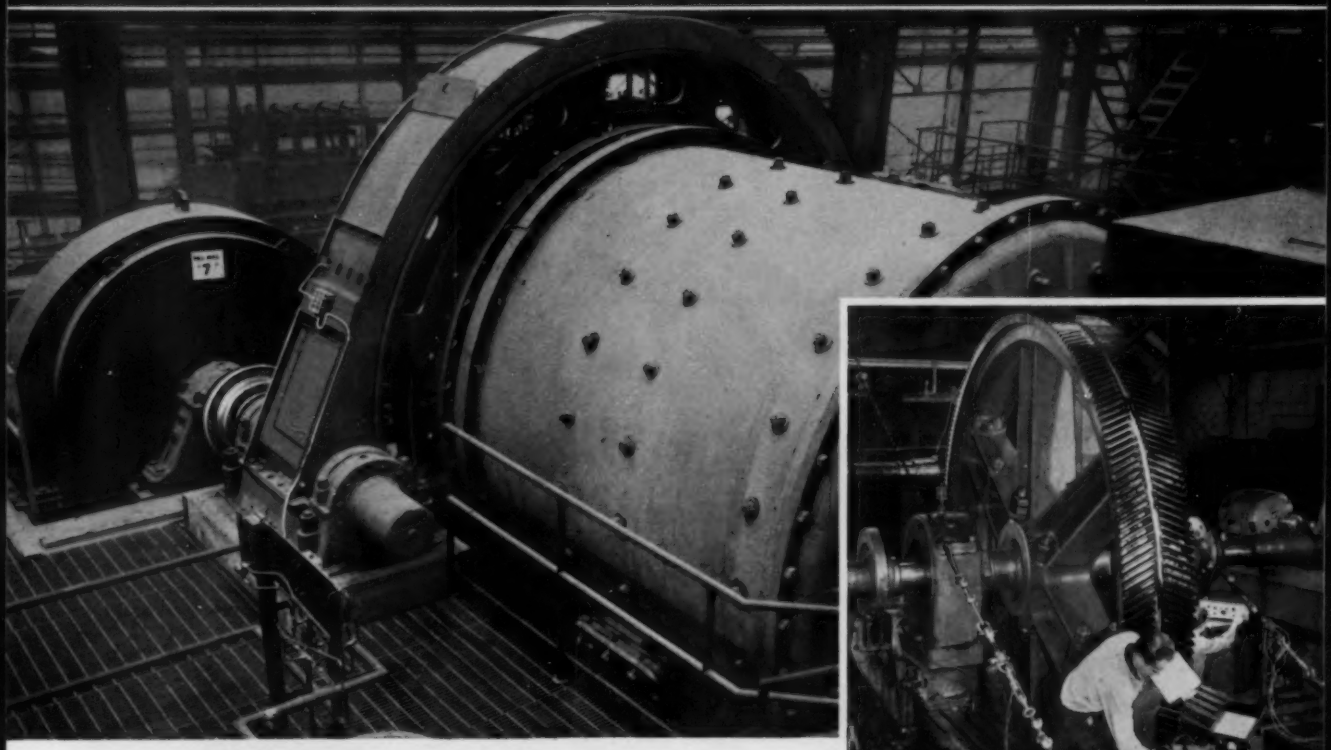
Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.

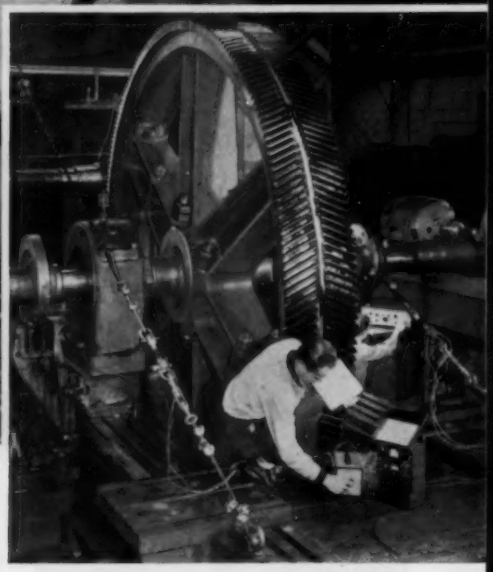
The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS. INC. 634 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

HELICAL GEARING BY **FALK** ...FOR MILLS AND KILNS





Falk Gears are *the Most Efficient* you can buy...

and are the most economical in the long run!

These are broad claims—but they have been proved beyond question by countless laboratory tests and confirmed by the actual experience of leading mill and kiln operators and engineers.

Falk ring gears transfer the gear tooth load directly to the shell flange of mill or kiln. They are correctly designed and of rugged proportions for maximum rigidity and accuracy. These helical gears—with extra-depth, extra-capacity teeth—provide a single-mesh, high reduction ratio drive giving you these advantages:

- Gear efficiency of 98+% (see column at right)
- High motor speeds—hence saving in motor and power costs
- Smooth helical gear action
- Maximum resistance against abrasive wear
- Longer service life of gears and of driving and driven machinery

This all adds up to the highest efficiency and greatest over-all economy. Don't compromise with quality on your gearing. *Insist upon Helical Gears by FALK*—the country's pioneer and leading supplier of precision gearing.

Consult any Falk representative—also, write for **Engineering Report 6170,** "Advantages of Helical Gearing."

THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WISCONSIN

GEAR EFFICIENCY PROVED BY SPECIAL LABORATORY TESTS

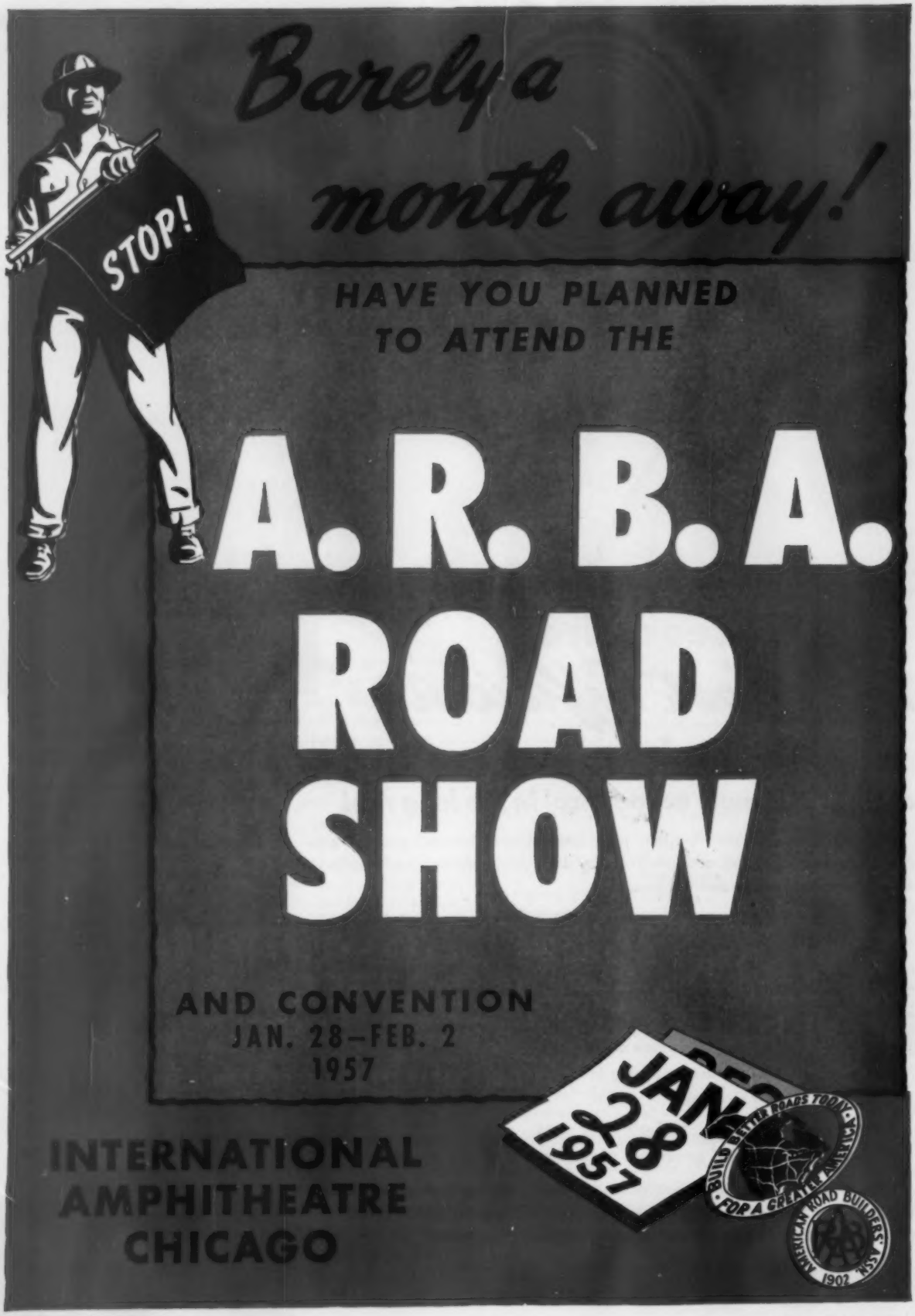
In the Falk Mechanical Test Laboratory, continual full-load tests of helical gears and gear units are conducted to provide accurate data on gear efficiency. Load efficiency, speed, lubrication and capacity tests are made.

The above photo shows the use of special testing equipment to obtain data on mechanical efficiencies of Falk helical gears. Tooth pressures corresponding to rated capacity and speed are applied through a loading device equipped with strain gages for accurate load measurement. Power losses are determined by an accurately calibrated torque meter on the connecting shaft of the motor.

Test data show the average tooth-mesh loss for a single-reduction set of Falk Helical Gears is *less than* 1½% of the rated capacity. Thus, the efficiency of the gears is 98½% *or greater*—proof that Falk Helical Gearing is the most efficient obtainable.

FALK

...a good name in industry


Barely a month away!
STOP!
HAVE YOU PLANNED TO ATTEND THE
A. R. B. A. ROAD SHOW
AND CONVENTION
JAN. 28–FEB. 2
1957
INTERNATIONAL AMPHITHEATRE CHICAGO
JAN 28 1957
BUILD BETTER ROADS TODAY
FOR A GREATER AMERICA
AMERICAN ROAD BUILDERS' ASSN.
1902

Irving Warner Jr., general manager of the Morrisville, Pa., area (left) and John L. Dobelbower, manager of the slag division.

The Warner Company's

Morrisville Plant Processes Slag and Bituminous Concrete

By ROY L. PECK

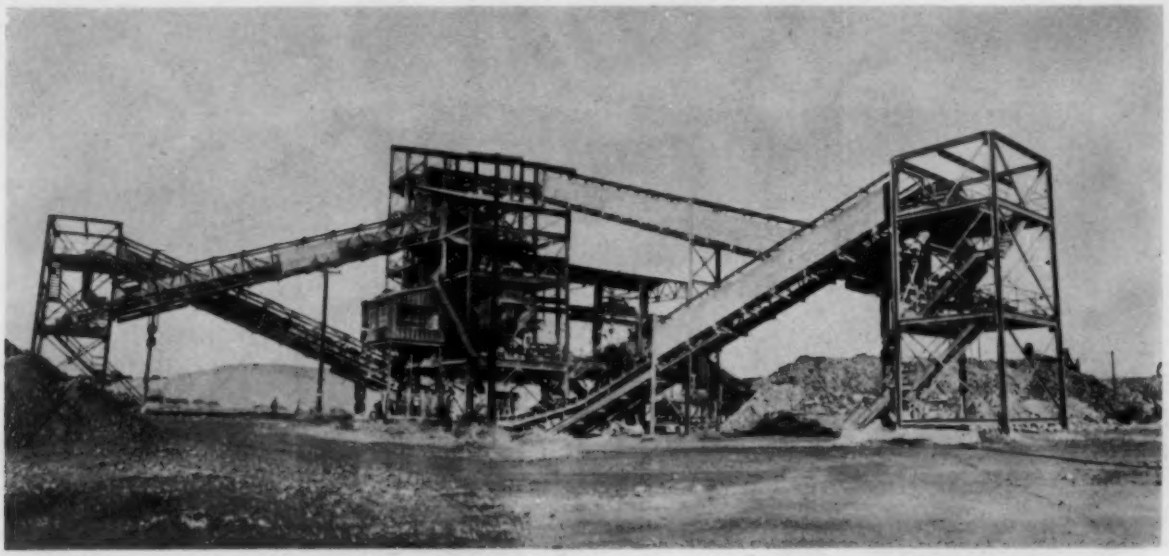
Franklin K. Wills, general superintendent of plants (right) with William Kish, superintendent of slag plant, Morrisville, Pa.

Another ON THE SPOT Report

The Warner Company, Philadelphia, Pa., one of the oldest and largest firms in this country in the production of sand and gravel, ready-mixed concrete, lime and stone, and other building materials, has added two new products to its list. These are blast-furnace slag and bituminous concrete.

In the spring of 1950, when the United States Steel Corporation announced the construction of the huge Fairless Steel Works at Morrisville, Pa., the Warner Company entered into an agreement with the former company to purchase and process the entire production of its blast-furnace slag. When iron ore is converted into pig iron in these blast furnaces, the load in the furnace descends and separates into iron and slag. The latter, drawn from the furnace at intervals, is air-cooled and may be processed into products used by industry or for construction. The capacity of the new processing plant which was built varies according to the six sizes produced, but is generally in the range of 300 to 350 t.p.h.

Since such air-cooled blast-furnace slag is a superior product for use in bituminous concrete for road construction (commonly called "blacktop" or "asphalt"), a modern plant was erected immediately adjacent to



An overall view of the crushing and screening operations, with the two outlying conveyor transfer towers flanking the central screening tower.

the slag-processing operation, to supply the paving requirements of the local area. This plant is now operating with a capacity of 1,100 t.p.d., to meet all standard specifications.

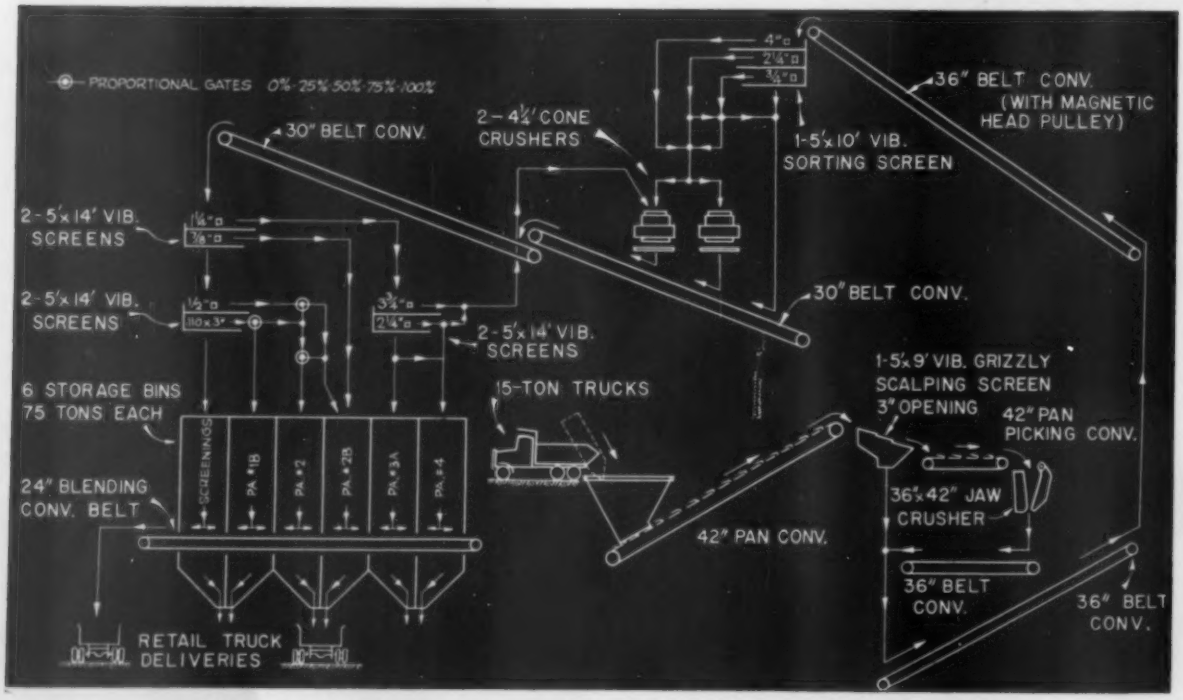
Late in 1952 the steel works started production; and at the same time Warner began to excavate, haul, and spread the slag for fill purposes in and around the steel plant. In 1954, when U. S. S. officials decided that their immediate fill requirements were about completed and the quality of the raw slag had been stabilized, Warner started the construction of the slag-processing plant, which had been designed by the engineering department of the company in preparation for this step. The plant started to operate in April, 1956.

A rear-dump truck emptying its load of raw slag from the blast furnace pits into the conical hopper, which has a 2- by 2-ft. grizzly on top. The pan conveyor is at the left, and stockpiles of finished slag products are in the background.

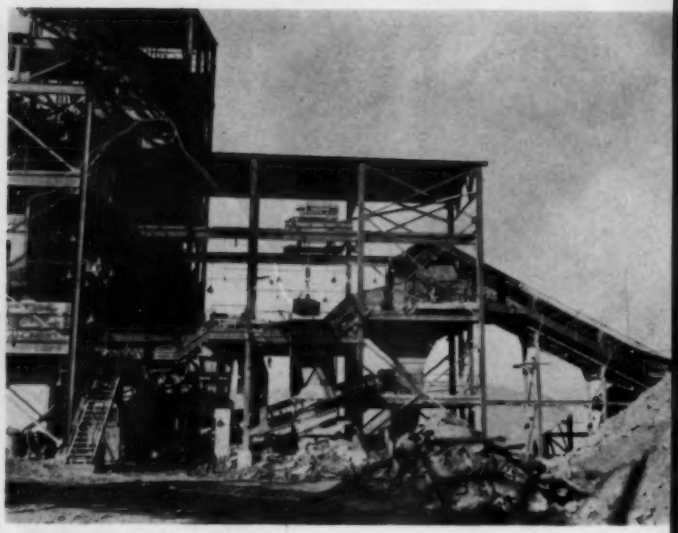
Slag Processing Warner's slag production at this plant begins with the excavation of the slag from pits at the blast furnace by two 2½-cu. yd. Koehring shovels which load into seven 15-ton Euclid rear-dump trucks. These units transport the slag from the pits to the processing plant, located about a mile away on the Warner property. The slag is processed, passing through crushing and screening equipment, and all the tramp iron is removed by magnets. The processed slag, in any of six or more gradations, is sold directly to customers at the plant bins or transferred to stockpiles for future sale. Grading into the six specification sizes is done simultaneously and in addition. Additional gradings can be made as ordered.

The trucks from the slag pits dump materials into a 25-ton conical hopper having a 24- by 24-in. grizzly on top. Metallic "skulls" or slag pieces not passing this grill are removed to one side for further reduction or for sale as scrap iron. The hopper feeds a 60-ft. long 42-in. inclined Chain Belt pan conveyor, which spills its load onto a 5- by -9-ft. Allis-Chalmers grizzly scalping screen with 3-in. openings. Overage on this screen goes over a 42-inch Chain Belt picking pan conveyor-feeder, into a 36- by 42-in. Traylor jaw crusher. Material from this crusher joins the minus 3-in. slag passing the scalper screen, in a common hopper, *via* a 36-in. belt conveyor.

From the common hopper the combined materials are fed onto a



Schematic flowsheet, showing the flow of material through the Morrisville slag processing plant.

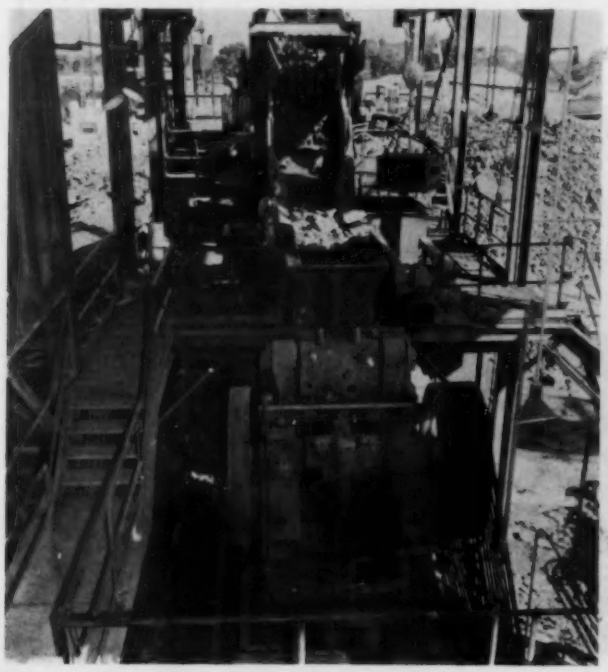


Two views of the primary stage of processing, showing the pan conveyor, grizzly scalping screen, picking pan conveyor, and the jaw crusher, feeding onto the 36-in. belt conveyor. The raw slag pile is at the right.

36-in. belt conveyor to the top of a transfer tower. At this point a Dings magnetic head pulley removes any metallic particles in the slag. Another 36-in. belt conveyor takes the material and discharges onto a 5- by 10-ft. Allis-Chalmers triple-deck vibrating sorting screen having 4-in. 2¼-in., and ¾-in. cloth. Overage on each of these three decks goes to a hopper for a controlled split into two chutes feeding into the two 4¼-ft. Nordberg Symons cone crushers, which discharge to a 30-in. belt conveyor going to the screening tower. Minus ¾-in. material from the triple-deck screen goes direct to this same belt.

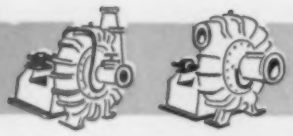
As shown on the schematic flow chart, any two-screen set of the six 5- by 14-ft. Seco double-deck vibrating screens installed in pairs at the top of the screening tower can be used as desired to get the six or more gradations required. One set of these screens carries top cloth of 1¼ in. and a lower deck of ⅞-in. square openings in both screens. Another pair of screens has top openings of ½-in. square openings and lower deck of .110 by 3-in. slots. A third pair carries 3¾-in. sq. openings in the top deck and 2¼-in. sq. openings in the lower deck.

Overage off the decks of the first pair of screens is taken either to the third pair of screens or direct into Pa. No. 2B bin. Materials from the decks of the other sets of screens are chuted through three proportioning gates, as indicated on the flow chart. These gates can be set to provide a split of the materials going through of 0, 25, 50, 75, or 100 percent of the flow in either of two directions. By means of these proportioning gates and a choice of deck cloth in the six screens, the plant can size the end product into the six gradations of Pa. No. 4, 3A, 2B,

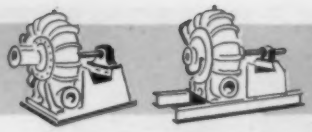


Left: The jaw crusher (foreground), with material coming over the picking pan conveyor and the grizzly scalping screen from the pan conveyor.

Below: A workman is throwing rejects off the picking pan conveyor. The vibrating grizzly scalping screen is at the right.



Another Customer Speaks



from INDIANA HERE'S MORE PROOF that

Mark Fleming holding a rock which passed through his 6-inch Thomas pump. Rear Mr. Fleming's letter at the right.

- - - you cannot buy, at any price, a more durable pump for sand and gravel than a THOMAS . . . YOU CANNOT BUY another pump that will make you as much money.

- **Increases production**
- **Eliminates breakdowns.**
- **Wearing parts last 4 to 6 times longer because they are made of dependable, Genuine, THOMAS NI-HARD.**
- **Operation backed up by factory advice and technical help.**

WESTERN SAND AND GRAVEL COMPANY
MARK M. FLEMING
PRODUCERS OF WASHED, SCREENED AND GRADED SAND AND GRAVEL
PLAINVILLE, INDIANA

October 16, 1956

Thomas Foundries, Inc,
Birmingham, Alabama

Gentlemen:

It has always been my policy to use the most efficient equipment available. This prompted me to buy a Series FL Thomas Durable Dredge Pump early in 1955, to replace an obsolete manganese Pump in use at that time.

I am happy to state that we have been well pleased with our pump since we have not had any downtime and have operated continuously with the original set of parts.

We have almost doubled our production with the Thomas pump and eliminated the necessary downtime to rebuild a pump every 50 to 60 days.

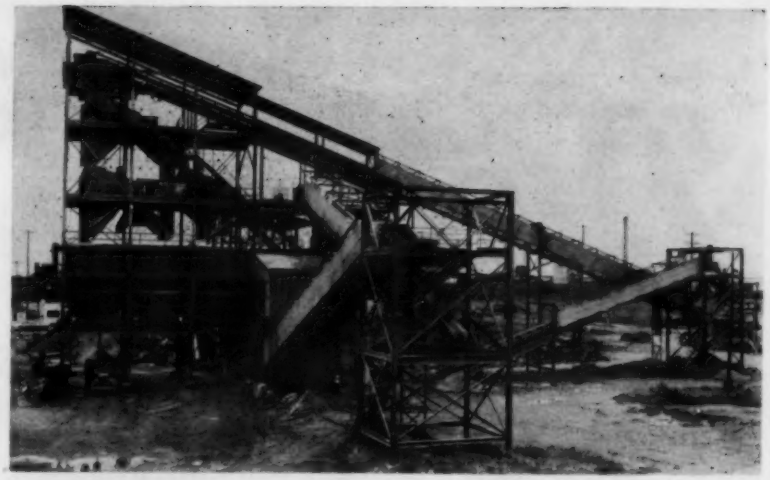
Sincerely yours,
WESTERN SAND & GRAVEL COMPANY
Mark M. Fleming
Mark M. Fleming

THOMAS FOUNDRIES, Inc.

P.O. BOX 1111, BIRMINGHAM, ALABAMA

2, 1B, and screenings. The use of a blending belt under the bins containing these sizes permits even greater variety of gradation. Rejects off the 3¾-in. deck are routed back to the cone crusher in closed circuit for further reduction.

Each of the six storage bins holding the above sizes of finished product has a 75-ton capacity, and the blending belt conveyor below the bins is 24 in. wide. Retail truck deliveries are made from these bins, and railroad car loading will be incorporated later. A Koehring Model 605 crawler-mounted crane having a 1½-cu. yd. clamshell bucket is used for keeping storage piles in order around the yard. A Michigan Model 175-A front-end loader loads trucks direct from stockpiles.

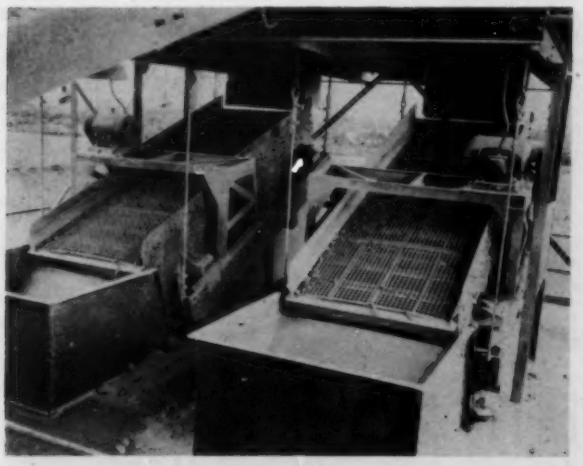


A closeup of the screening tower and the 36-in. belt conveyor at right. Here can be seen the triple-deck vibrating sorting screen, the two-way hopper, the six double-deck vibrating screens in pairs, and the six bins for truck loading.

Bituminous Concrete Located immediately adjacent to the slag-processing plant and the slag stockpiles, and served by a short truck haul from the latter, is the new bituminous concrete plant of the Warner Company, designed and built by the McCarter Iron Works. This asphalt setup is probably one of the most modern in this country for the particular purpose served. It is capable of meeting practically any mix specification for either hot or cold bituminous concrete.

The plant is built around the McCarter basic M-5000-S plant. One of the unusual features is a separate supporting structure for the scales and weighing equipment, so that all tower vibration is completely divorced from the weighing operation. The plant is equipped with a 5,000-lb. capacity pugmill, and is com-

The triple-deck vibrating sorting screen has 4-, 2¼- and ¾-in. cloth, the discharge of overage being split two ways into the cone crushers for further reduction.



One of the three pairs of 5- by 14-ft. double-deck vibrating screens which are installed in the screening tower. Each deck has openings of a different size, and material from each deck is chuted through proportional gates to effect the desired gradations.

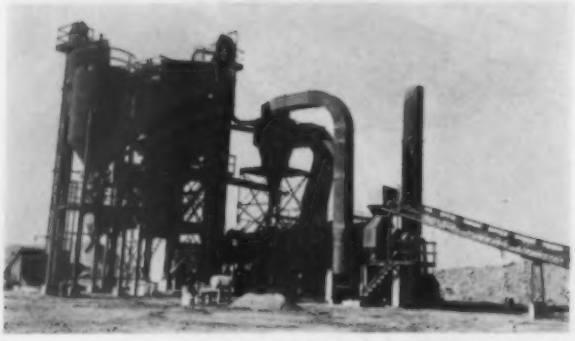
The three double-compartment storage bins receive materials from the six vibrating screens and proportional gates above them, and feed into the bins containing six gradations. A blending belt below the bins gives further variety of gradation.

A crawler-mounted crane with a 1½-cu. yd. clamshell bucket is used to keep storage piles in order.

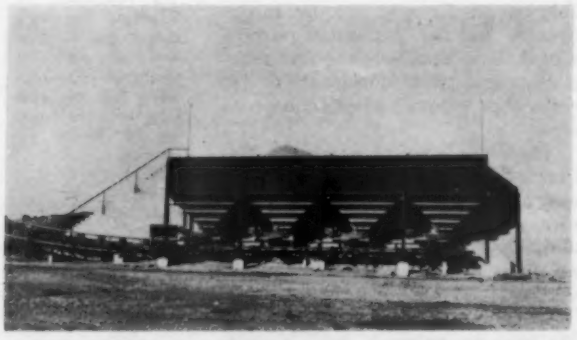
pletely operated by air cylinders, actuated by pushbuttons. This arrangement provides for efficient operation with the minimum of operator fatigue.

The feed system consists of four individual 65-ton capacity bins, each equipped with a Syntron vibratory feeder, providing for extremely close positive control of the cold feed. The feeders discharge onto a 30-in. Hewitt-Robins horizonal belt conveyor, which takes materials to the 34-in. diameter McCarter center-outlet dryer. At either end of this dryer is an oil burner to overcome the problem of producing cold mix. When only the intake burner is fired, the dryer becomes in a sense a dryer-cooler, and the material going out of the discharge end is held to the minimum temperature, 125 deg. F., which, of course, is ideal for a cold mix. On the other hand, when both burners are fired, a very high rate of tonnage can be put out for hot mix. According to Warner spokesmen,

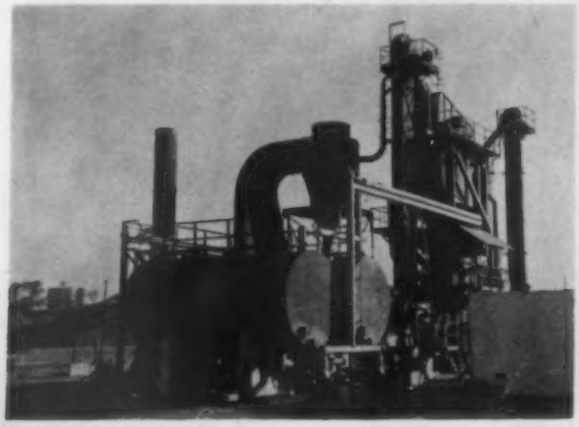
(*Continued on page* 188)



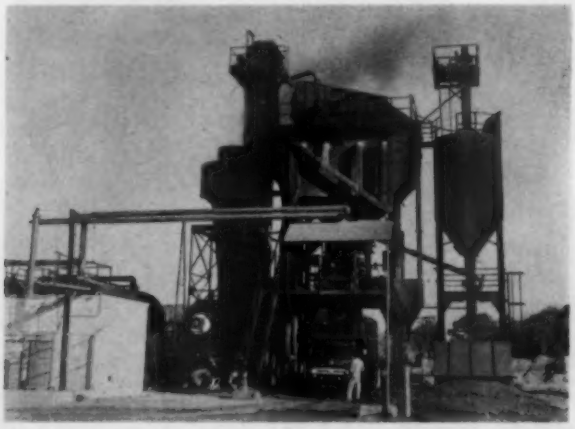
The new bituminous concrete plant is located immediately adjacent to the slag processing plant. This view shows the mixer, fed by the conveyor (right) from the aggregate storage bins, the dust collector, and hot aggregate bins.



The four 65-ton aggregate storage bins are each equipped with vibratory feeders to the 30-in. belt conveyor leading to the plant drier at the left. This provides for close and positive control of the cold feed.



This view shows the two 15,000-gal. asphalt storage tanks and the heating control switch house, with the feeder conveyor from the bins at the left.



In this shot a truck is taking on a load of "hot mix" bituminous asphalt. Elevators, bins, and overhead weigh batchers are seen, also the electric heating control house (left).

N.C.S.A. NAMES WINNING PLANTS IN 1955 SAFETY COMPETITION

ACCORDING to the U. S. Bureau of Mines the safety record at operations enrolled in the 1955 National Crushed Stone Association Safety Competition was one of the best since this contest was started 30 years ago.

The frequency at which injuries occurred in the 1955 contest—14.445 per 1,000,000 man-hours of worktime—was lower than the rate of 16.923 for the previous year's contest, and it was bettered only in 1939 when a rate of 13.660 was recorded. The severity rate of 2.082 days lost per 1,000 man-hours of exposure to the hazards of the industry was next to the lowest such rate attained during the 30-year statistical history of the competition. The lowest rate—1.093—was recorded in the 1945 contest. In addition to these achievements in the 1955 contest, the number of mines and quarries participating was a record high; 30 of the operations worked 2,900,000 man-hours without a disabling injury; and the 73 competing plants operated slightly over 7,800,000 man-hours—the highest aggregate of worktime since 1949.

The best record in the 1955 National Crushed Stone Association Safety Competition was made by the Bell underground limestone mine, Bellefonte Division, Warner Company, Bellefonte, Pa. This plant for its outstanding achievement of operating 264,075 man-hours without a disabling injury is awarded a bronze plaque—top honor—provided by the *Explosives Engineer Magazine*. The award is the second consecutive time this plant has been so honored. In addition to the trophy, a personal certificate is presented to each employee by the National Crushed Stone Association as a tribute to the part he played in achieving the outstanding safety record for his plant in the 1955 competition.

Bessemer limestone quarry, the Bessemer Limestone and Cement Company, Bessemer, Pa., the receiver of top honors in 1943 and 1945, had the next-best safety record in the 1955 contest for an operating period totaling 229,230 man-hours without a disabling injury.

In third place, with an injury-free record for 227,587 man-hours, was the Columbia Limestone mine, Columbia Quarry Company, Columbia, Ill.

The Glen Mills traprock quarry, the General Crushed Stone Company, Glen Mills, Pa., placed fourth with an injury-free record during 222,987 man-hours of worktime.

Thirty operations, 22 quarries and 8 underground mines, the latter group including the trophy winner, attained injury-free records in 1955 and are awarded Certificates of Honorable Mention by the National Crushed Stone Association. These 30 plants were worked 2,866,310 man-hours, which represented 37 percent of the total worktime of all 73 competing operations.

The injury-free operations, in addition to the foregoing, were as follows:

Krause Quarry No. 1, Columbia Quarry Company, Columbia, Ill., 187,216 man-hours.

Security Quarry, North American Cement Corporation, Hagerstown, Md., 180,140 man-hours.

Cheektowaga Quarry, Federal Crushed Stone Corporation, Cheektowaga, N.Y., 140,065 man-hours.

Kimballton Mine, Standard Lime & Cement Company, Kimballton, Va., 120,142 man-hours.

Plant No. 1 Quarry, Callanan Road Improvement Company, South Bethlehem, N.Y., 116,325 man-hours.

White Haven Quarry, General Crushed Stone Company, White Haven, Pa., 114,800 man-hours.

Jamestown Quarry, Superior Stone Company, Jamestown, N.C., 101,953 man-hours.

Belgrade Quarry, Superior Stone Company, Maysville, N.C., 94,644 man-hours.

Ives Quarry, Consumers Company, Racine, Wis., 91,159 man-hours.

Bakerton Mine, Standard Lime & Cement Company, Bakerton, W.Va., 83,439 man-hours.

Cedar Hollow Quarry, Warner Company Devault, Pa., 76,608 man-hours.

Martinsburg Quarry, Standard Lime and Cement Company, Martinsburg, W.Va., 69,044 man-hours.

Plant No. 1 Quarry, New Haven Trap Rock Company, Wallingford, Conn., 63,924 man-hours.

Bakers Quarry, Superior Stone Company, Monroe, N.C., 62,682 man-hours.

Yellow Rock Mine, Kentucky Stone Company, Yellow Rock, Ky., 60,667 man-hours.

Bonne Terre Quarry, Valley Dolomite Corporation, Bonne Terre., Mo., 60,320 man-hours.

Plant No. 4 Quarry, New Haven Trap Rock Company, Plainville, Conn., 52,201 man-hours.

Union Furnace Quarry, Warner Company—Bellefonte Division, Tyrone, Pa., 41,905 man-hours.

Prospect Stone Plant No. 6, Eastern Rock Products, Incorporated, Prospect, N.Y., 37,328 man-hours.

Cape Girardeau Mine, Federal Materials Company, Cape Girardeau, Mo., 36,000 man-hours.

Stafford Quarry, Genesee Stone Products Corporation, Stafford, N.Y., 34,176 man-hours.

Avoca Quarry, Jefferson County Stone Company, Avoca, Ky., 27,104 man-hours.

Boonesboro Mine, Kentucky Stone Company, Richmond, Ky., 21,914 man-hours.

Mine No. 7, Columbia Quarry Company, Elsberry, Mo., 18,088 man-hours.

Randville Quarry, Superior Rock Products Company, Sagola, Mich., 16,184 man-hours.

Plant No. 4 Quarry, Southwest Stone Company, Knippa, Tex., 14,403 man-hours.

Man-hours of worktime or exposure to the hazards of the industry totaled 7,823,000—6,507,189 at the 60 quarries and 1,315,811 at the 13 underground mines. During this volume of work there were 113 disabling injuries of which 1 resulted in death; 1 was a permanent total injury; 3 were partial permanent; and the remaining 108 were temporary total injuries.

Accidents in which handling materials were involved caused 20, or 18 percent of all injuries for which stated causes were submitted by competing operations; falling objects resulted in 15, or 14 percent; falls of persons totaled 13 (including 1 permanent total disability), or 12 percent of the total number of injuries; haulage accidents injured 11, or 10 percent; and accidents involving machinery resulted in 9, or 8 percent. The most severe temporary total injuries occurred while materials were being handled; injuries resulting from haulage accidents ranked second; electricity third; machinery fourth; and falling objects fifth. One employee was electrocuted.

Crushed stone operations in 19 states were enrolled in the 1955 competition. New York had 13; Keutucky, 9; North Carolina and Pennsylvania, 7 each; Illinois and Missouri, 5 each; Virginia, 4; Con-

(Continued on page 188)

Fuji Cement Company's new wet-process cement plant at Muroran on the island of Hokkaido in northern Japan.

Japanese Wet-Process Plant Opened on Hokkaido Island

What is said to be the first closed circuit grinding wet process cement plant constructed in Japan recently went into operation at Fuji Cement Company's new mill at Muroran on the island of Hokkaido. This installation, located on Japan's coldest and northernmost island, was designed by Allis-Chalmers Mfg. Company for eventual expansion to 800 metric tons of clinker per day.

Raw material fed to the plant contains approximately 79 percent $CaCO_3$, 17 percent clay and 4 percent slag. After crushing to minus 10 mm. the rock is ground in closed circuit by a 10- by 17-ft. Allis-Chalmers ball mill and a 12- by 40-ft. Dorr HX Classifier. Ground rock is thickened in a 125-ft. Dorr Torq Thickener prior to calcination. Blending and slurry correction is accomplished in one 40-ft. diameter and four 30-ft. Dorr slurry mixers.

The great majority of Dorr-Oliver equipment installed in the mill was fabricated in Japan by Sanki Engineering Co., Ltd., the Dorr-Oliver manufacturing representatives in Tokyo. Some parts for the classifier and the thickener center mechanism were imported from the United States. The plant was manufactured by Kobe Steel Works, Ltd., under license from Allis-Chalmers.

India's Newest Cement Plant Completed at Dalmianagar

A new cement plant, constructed by the Asoka cement plant at Dalmianagar, Bihar, India, recently went into operation. The plant features an 800-ton per day kiln, said to be the largest single kiln in Asia.

This plant is the third cement plant for Dalmianagar. The two others belong to an affiliate, Rohtas Industries.

Warner's Morrisville Plant

(From page 186)

this equipment will maintain rated tonnages even under adverse conditions.

There are four compartment-type hot aggregate bins in the setup, each with a capacity of 100 tons. These bins and all asphalt equipment in the plant were insulated by the Sellers Company, Ardmore, Pa. Asphalt piping and the two 15,000-gal. asphalt storage tanks are electrically heat, eliminating any use of steam heating in the plant. This is another feature which contributes to safety and efficient intermittent operation of this type of plant.

Hot aggregates are raised by a vertical elevator to a special 5- by 14-ft. Hewitt-Robins double-deck screen, which is sized four ways. The head end has ⅜-in. cloth, with ⅛-in. cloth on the bottom; the front end has 1¼-in. cloth at the top and 9/16-in. at the bottom. The fine aggregate mineral filler tank is of 15-ton capacity. A screw-type conveyor takes material from beneath this tank to the aggregate weight hopper, the asphalt weigh hopper, and the mixer. A dry-type dust collector installed by the McCarter Company is positioned astride the drier, as shown in the accompanying photograph.

Due to the flexibility of this plant, it is difficult to speak more specifically regarding capacities. On normal hot-mix work, under average conditions, there would be no difficulty in producing 115 t.p.h. Since the pugmill itself has this capacity, the length of the mixing cycle, of course, determines the output. Under similar average conditions, the complete hot-mix batching cycle should require approximately 60 seconds; however, this is variable according to conditions.

As blast-furnace slag is an ideal aggregate for bituminous concrete, the value of the location of this plant is apparent. Slag of this type has a natural affinity for asphalt and also has the ability to wear to a "sandpaper" finish on highways, thus reducing the tendency of cars to skid. When both the slag-processing and bituminous concrete plants are working at full capacity, the combined operation should prove one of the most efficient in this country.

Officers of the Warner Company include Charles Warner, chairman of the board of directors; John Curtin Jr., president; and Irving Warner Jr., general manager of the Morrisville area. Executives at the Morrisville operation include Franklin K. Wills, general superintendent of plants; John L. Dobelbower, manager of the slag division, and William Kish, superintendent.

N.C.S.A. Safety Winners

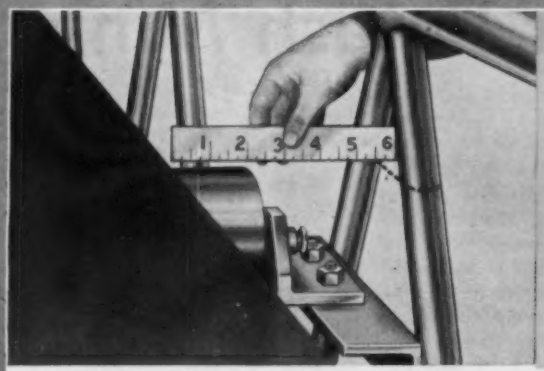
(*From page* 187)

necticut and West Virginia, 3 each; Maryland, Michigan, New Jersey, Ohio, Tennessee, Texas, and Wisconsin, 2 each; and Georgia, Massachusetts, and Oklahoma, 1 each.

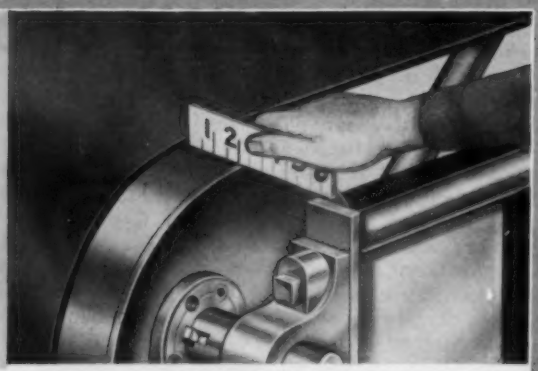
The safety competition among operations in the crushed stone industry is conducted by the Bureau of Mines under the same rules as the National Safety Competition. The same records are used in both contests. However, there are two additional requirements that must be established before a crushed stone operation may participate in this competition, namely: (1) it must have commercial production of crushed stone, and (2) it must be a member of the National Crushed Stone Association.

REDUCE BELT COSTS WITH MARCO TUBULAR FRAME CONVEYORS

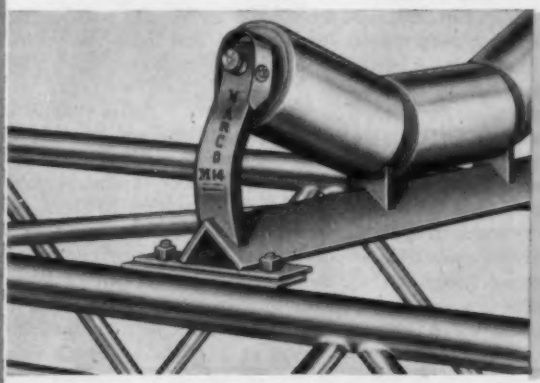
Exclusive conveyor features increase belt life by offering maximum protection against edge damage



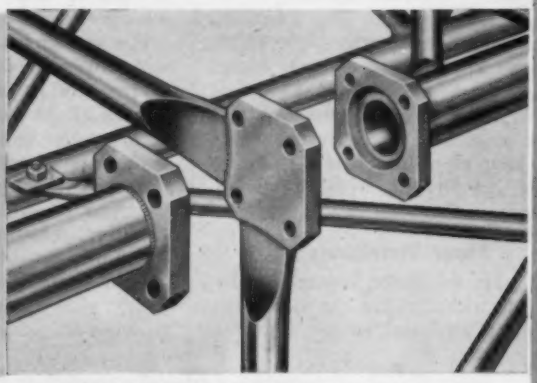
WIDER FRAME—MARCO Tubular Frames are widest in the industry. They provide 100% more space (5½") in the critical area—between belt edge and nearest frame member. Pedestal type return idler brackets are used, instead of hanger brackets that confine and damage belt.



WIDER FACE PULLEYS—MARCO is first with modern pulley specifications. 2" between belt and pulley edge—provides 100% greater protection than outmoded standards. Reduces possibility of belt destruction caused by "belt wandering" in high tension areas.



ALL TUBULAR MEMBERS—MARCO Tubular Frames are more rigid. Constructed of the strongest known structural member, these frames are modern—and resist material and water build-up. Sharp "belt cutting" edges are eliminated with this exclusive construction.



RIGID JOINT CONSTRUCTION—Another MARCO exclusive—4 bolts in each connection—16 in each joint. Not the usual 1 or 2 per connection. Joints are more rigid. Resists frame misalignment, simplifying belt training and increasing belt life.

Now, more than ever, conveyor belt represents the largest major repair or replacement expense in a conveyor installation. Realizing the extreme importance of this fact, MARCO has designed every conceivable belt saving idea into its Tubular Frame Conveyors.

MARCO is first to have all 4 of these proven belt protection features: a wider frame, wider face pulleys, all tubular members and the most rigid joint construction.

If wind, uneven loading, or factors beyond control should cause "belt-wandering", this exclusive conveyor design offers the operator the finest, most complete protection against belt "edge damage".

Increasing belt life by reducing belt "edge damage" is only one of the cost saving advantages in MARCO Tubular Frame Conveyors. Remember, your conveyors are not mere plant accessories—they deserve the attention of a specialized manufacturer offering modern specifications, carefully and properly designed to meet your most exacting requirements. For more information consult your MARCO Distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Missouri.

MARCO*

*Trademark Reg.

engineered MARCO products:

Tubular Frame Belt Conveyors • Conveyor Idlers • Solid and Self Cleaning Steel Pulleys • Bucket Elevators • Control Gates • Feeders • Bins

POWER For Potash Mining

By B. E. RECTOR
and
C. B. RISLER

Mining, Petroleum, and Chemical Section
Industry Engineering Department
Westinghouse Electric Corporation

THE DISCOVERY of a major deposit of potash ore in the desert area of southeastern New Mexico in 1925 presented a combined challenge to the mining and electrical industries. Here 750 to 1,800 ft. below the surface of a desolate, wind-blown desert was a bountiful supply of much-needed material. Shafts had to be sunk, the ore mined, transported to the foot of the shaft, hoisted to the surface, and processed to produce a commercially attractive product. Energy, and plenty of it, was required to perform these tasks economically. The convenience, economy, and safety of electrical energy dictated its use.

A major factor in the design of the electrical system is the "two-faced" electrical nature of potash ore. When dry, it is non-conductive and non-corrosive; and being crystalline in nature, it can be easily cleaned from equipment by blowing. However, the ore is hygroscopic and, once moist, becomes both conductive and corrosive. This aspect of its "character" remains quiescent for long periods in this arid location, but suddenly becomes apparent when extreme atmospheric changes occur or when processing equipment leaks develop. Therefore, electrical equipment must be adequately protected and kept clean to prevent grounds and short circuits, which result in loss of production.

Plant Distribution

A main substation is provided by the electrical utility to transform incoming electrical energy from 69 kv. to 2,400 or 4,160 volts and, in a few instances, to 12.47 kv. for plant use. Power is distributed to the hoisting and processing equipment topside, and underground to the mine equipment serving the working face, which may be several miles distant. Throughout this distribution channel, the greatest caution must be given to continuity of service; upon this feature depends the safety and comfort of personnel, the quality of product, and profitable operation. (See Table I, p. 201.)

The main substation generally has two output feeder breakers, each serving one underground or two overhead lines into the plant proper. The greater vulnerability of overhead lines dictates a double overhead circuit compared to a single underground cable circuit.

The distribution systems in potash refining plants are characterized to a large measure by the initial size of the operation and the period in which they were installed. Generally, power is fed into one or more main buses by the multiple feeders from the main substation. From this point, simple radial distribution systems have served the many refinery load centers and those underground at mining operations. (See Table II, p. 201.)

However, such radial systems lack flexibility and do not provide continuity of service, should defects develop in feeders, transformers, or switching equipment. Modern radial systems that provide primary or secondary selectivity are coming into more general use. Primary selective radial systems have multiple feeders in parallel to the load centers, where

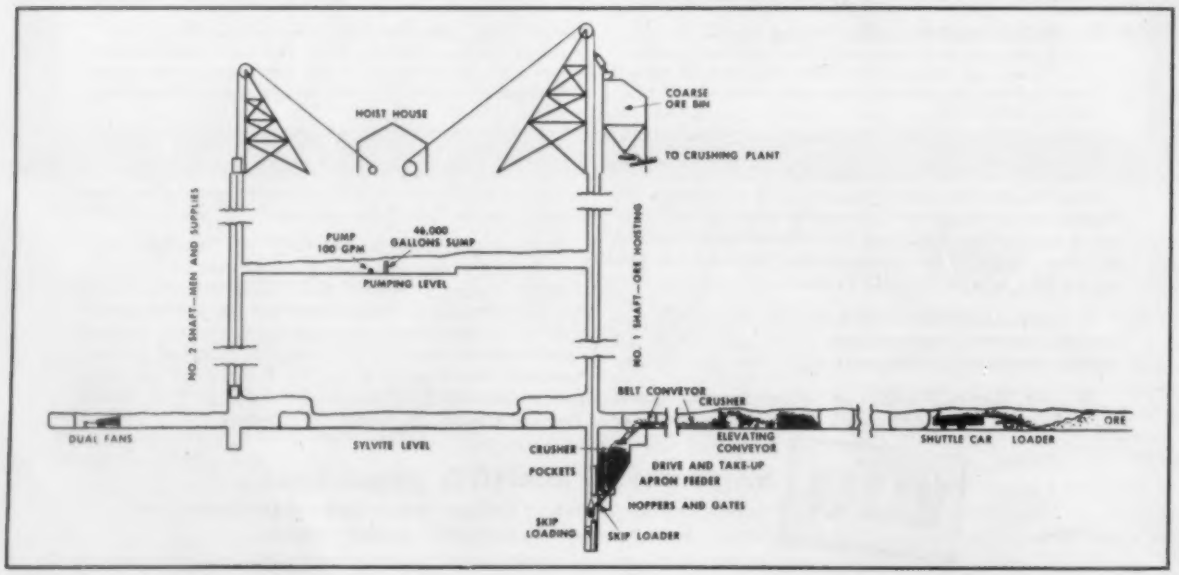


Fig. 1—Profile of a typical potash mine.

selective switching permits operating the load from either of two available feeders. With a secondary selective system, continuity of service is further assured by duplicating power-center transformer facilities.

The practice of carrying multiple feeders into the mine is developing. Extension of the working faces several miles from the bottom of the original shaft calls for establishment of remote shafts for men and supply portals. At least one "high line" can be run above ground to such a shaft, or to a bore hole, and a high-voltage cable can be run underground at that point. Several of these supply feeders can be tied together to form an underground primary distribution "network," thus achieving a high degree of protection against power outages caused by faults in primary distribution.

For certain electrical loads, continuity of service is extremely critical. To serve these loads, an emergency section of the main bus is established. This section is connected to the main bus during normal operation through a bus-tie circuit breaker. However, during main-bus power failure, the tie breaker is opened, and the emergency bus section is energized from local auxiliary generating equipment. The emergency bus restores electrical energy quickly to at least one of the mine hoists and such critical items as ventilating-fan pump systems. In certain processing equipment, such as classifiers and thickeners, power outages can result in solidification of the material, requiring costly "digging out" procedures. Such loads are also placed on the emergency bus.

Power Centers—in the Mill

Energy received from the power plant bus is transformed to either 440 or 220 volts for motor-driven machinery. The transformation is frequently performed by power centers—unitized combinations of high-voltage breakers or switching equipment, transformers of appropriate capacity, and low-voltage switchgear for distributing the energy at utilization voltage to multiple feeders.

High-voltage protection consists of high-voltage circuit breakers, fused or unfused load-break disconnect switches, fused or unfused magnetizing current-break switches, or a combination of both switches and breakers. Switches are mounted in a cubicle integral with the entire power center, while circuit breakers are mounted in matching cubicles.

Low-voltage circuit protection and switching equipment is physically located on the opposite side of the transformer. It consists of air circuit breakers of the drawout type, and network protectors where the distribution system dictates their use. Instrumentation and relaying are included to suit the operating practice of each operation.

The location of the power center and the operating conditions determine the type of transformer construction. Dry-type transformers offer the advantages of lighter weight and reduced space requirements over liquid-filled types. This is the most popular type for indoor applications. For outdoor applications and those indoor locations where severe atmospheric conditions exist, liquid-immersed transformers can be used. These are of the askarel- or oil-filled type. If the power center is located indoors, askarel-filled transformers can be used without the provision of expensive vaults and other fire preventive features required with oil-immersed types.

When the transformer is located outside, it is throat-connected to the low-voltage switchgear through the building wall. This reduces to the minimum the required indoor mounting space and provides flexibility for adding low-voltage distribution switchgear as the plant expands.

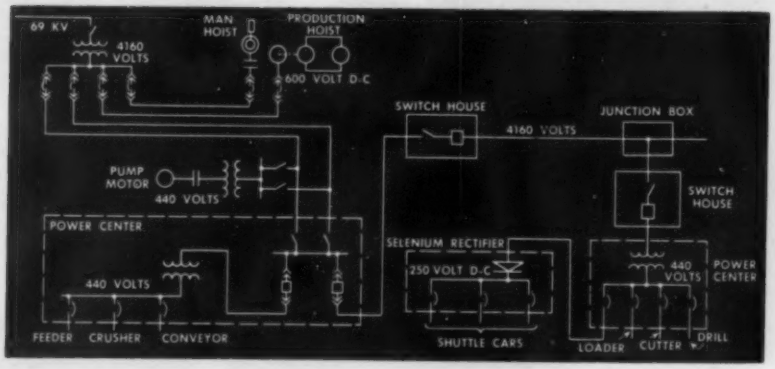


Fig. 2—A simplified diagram of a typical plant and mine distribution system.

Underground Distribution

Originally, the common practice was to transmit power down the mine shaft at 2,300 volts and transform it underground to 240 volts for a.-c. mining equipment and for rectification for d.-c. traction apparatus. However, as the faces advanced from the bottom of the shaft, such a distribution system,

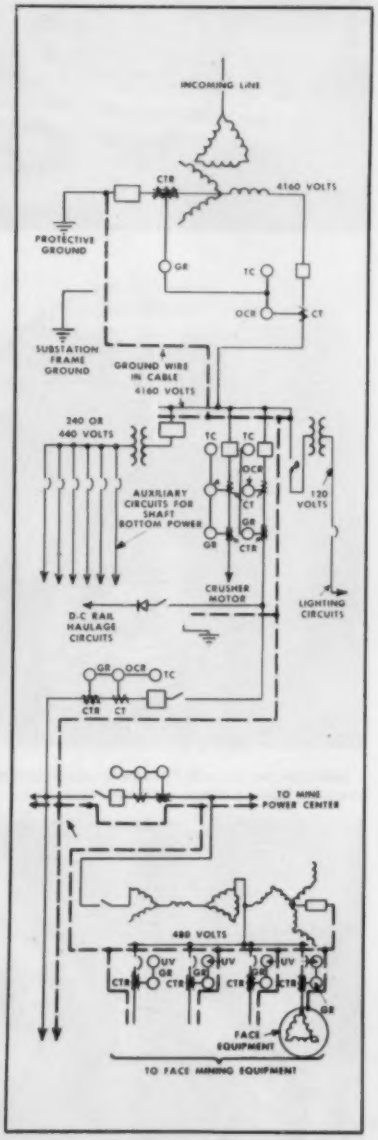
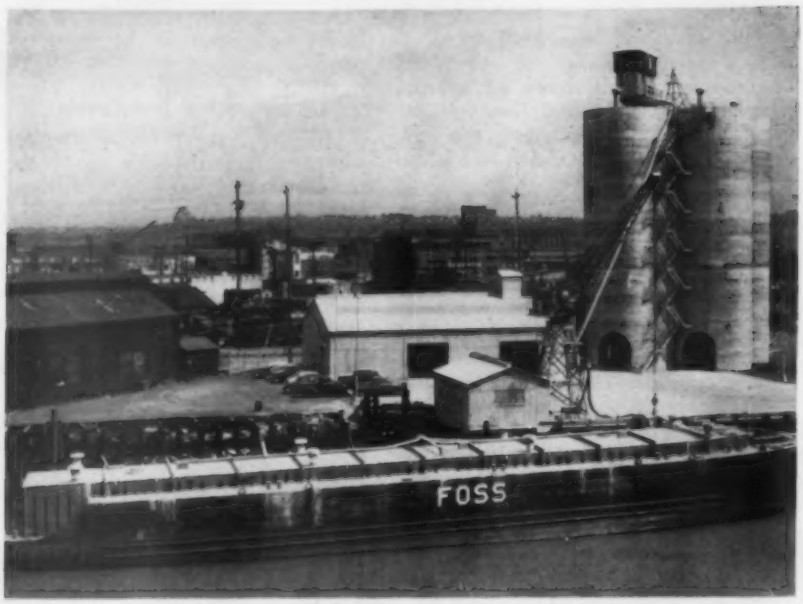


Fig. 3—Grounding system for electrical equipment in potash mine.

CT—Current Transformer
CTR—Ring-Type Current Transformer
OCR—Over-Current Relay
GR—Ground-Protection Relay
TC—Trip Coil
UV—Under-Voltage Trip Coil



Cement storage and distributing station. The 6500 barrel capacity barge tied up at pier with conveying line from barge to silos clearly visible.

Bulk-truck loading with F-H Airslide having two discharge points for loading to two hatches of truck.

"Olympic" speeds marketing

Like hundreds of cement and other chemical-processing plants, Olympic Portland Cement Company, Ltd. of Seattle, Washington found it convenient and profitable to apply Fuller conveying equipment to the operation of its cement distributing station at Harbor Island, Seattle.

Cement is loaded into a barge of 6,500 barrels capacity at Olympic's Bellingham, Washington cement plant by F-H Airslide® fluidizing conveyors and Fuller-Kinyon Pump. The barge is transported to the distributing station at Harbor Island, a distance of approximately 95 miles, taking advantage of low water transportation rates. Upon arrival at destination the barge is unloaded by a Fuller-Kinyon Type D remote-control unloader, which conveys the cement 350 feet to any one of four storage bins on shore in approximately 18 hours, averaging about 360 barrels an hour. Silos have a capacity of 10,000 barrels each.

One of two control stations, including Fuller control panel with running-light equipped flow diagram and dial scales for individual axle loading.

Bag packing. Overhead is a 1200 cu. ft. per hour Airslide which delivers cement to an elevator serving the packer.

Fuller-Kinyon Remote-Control Unloader in hold of barge; cargo is conveyed to any one of four silos on shore, a distance of approximately 350 feet.

...lowers distribution costs with Fuller-Kinyon Pumps and F-H Airslides

Handling of cement in the distributing station is accomplished in a most ingenious and efficient manner by the use of F-H Airslides, conveying from any one of four silos to two truck-loading stations and a bag packing machine. Controls, as installed, make truck loading automatic, at a rate of 500 barrels an hour, insuring each end of the truck being loaded simultaneously to the accurate final weight. A truck, with a capacity of 120 barrels, can be loaded in 10 to 15 minutes.

Air for conveying by the Fuller-Kinyon Unloader from barge to silos, is supplied by a Fuller Rotary Single-stage Compressor, with a capacity of 1647 c.f.m. at 30-lb. pressure. A Fuller Rotary two-stage machine with a capacity of 281 c.f.m., 100-lb. pressure, is also installed to supply air for general plant use.

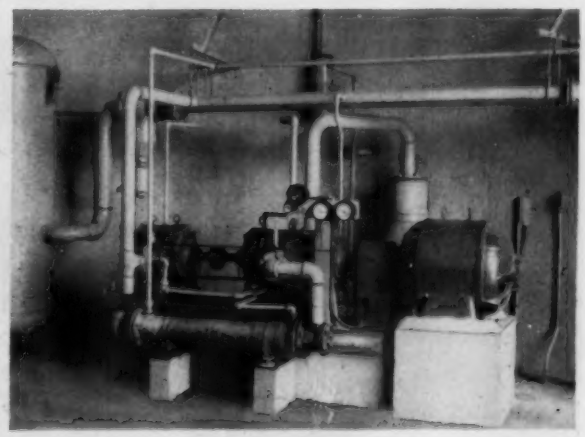
Bulletin G-4, illustrating and describing this most modern and efficient installation is yours for the asking. Write for it today.

Overall view of loading station. One of two stations, showing operating-control deck and double Airslide serving two silos. Each Airslide has two discharge points which converge from two neighboring Airslides so that only one pair of loading hoses is necessary for each station.

G-145T
4006

SEE US AT THE
CONCRETE INDUSTRIES EXPOSITION
KIEL AUDITORIUM, ST. LOUIS, MO.
BOOTH 81 & 82, FEB. 25-28

FULLER COMPANY
100 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Chicago · San Francisco · Los Angeles · Seattle · Kansas City · Birmingham



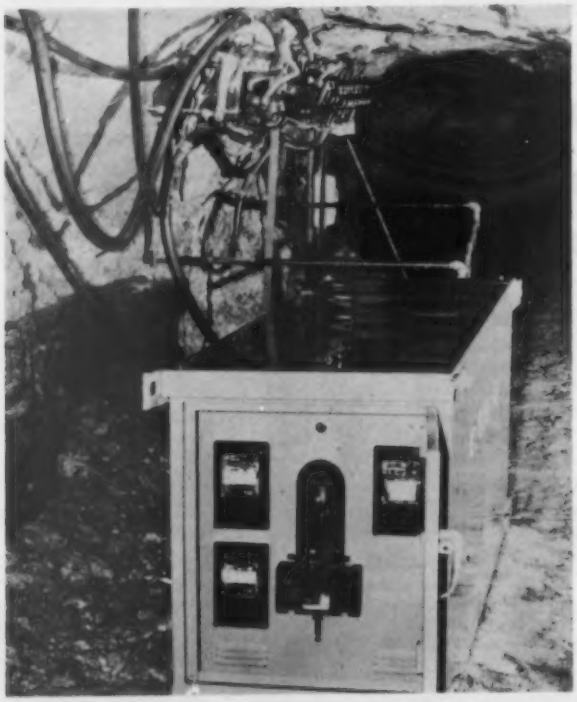
Fuller Rotary Two-stage Compressor, supplying general plant air. Capacity 281 c.f.m., 100-lb. pressure. A Fuller Rotary Single-stage Compressor, capacity 1647 c.f.m., 30-lb. pressure, is also installed for supplying air for the Fuller-Kinyon Unloader.

particularly the radial type, required large, costly cables to maintain adequate voltage regulation. This has led to the use of 4,160 volts as the popular distribution voltage in underground workings, and in at least one mine, power is taken to the bottom at 12.47 kv. The introduction of higher-powered face equipment, such as continuous miners, has required an increase in working-face voltage. Present utilization of 440 volts results in cables of smaller size, reduces power losses, and improves voltage regulation at the machines.

Power Centers—in the Mine

The transformation of energy from distribution voltage to utilization voltage is done underground with equipment that functions like the power centers previously described for mill distribution. However, operating conditions dictate specially designed equipment. Underground power centers are designed to withstand physical abuse in the active working area; they must also have adequate ventilation in confined spaces, and appropriate dimensions for lowering through the mine shaft. Although the equipment may operate in underground areas with increased headroom, it may have to pass through low areas when advancing to follow the working face. The low headroom of some of the ore deposits necessitates the maximum height of about 3 ft.

Fig. 4—An underground portable switch house.



For underground service, power centers with dry-type transformers are used. The high-voltage compartment on the input end of the unit contains the cable-connecting plug and, if desirable, an oil-immersed disconnecting device. A 600-volt panelboard of fixed molded-case air circuit breakers is mounted at the opposite end of the equipment. Feeders served from these breakers are taken out through connecting receptacles at the end of the unit.

Frequent movement of the power centers is necessary to keep them within reasonable distance of the working face. The units have self-supporting, skid-type bases and are placed directly on the mine floor. The power center is placed on a dolly for transporting over the mine rail system if major distances are to be traveled. With plug-and-receptacle type disconnecting means for both high-and low-voltage connections, the units can be readied quickly for removal from one location to another.

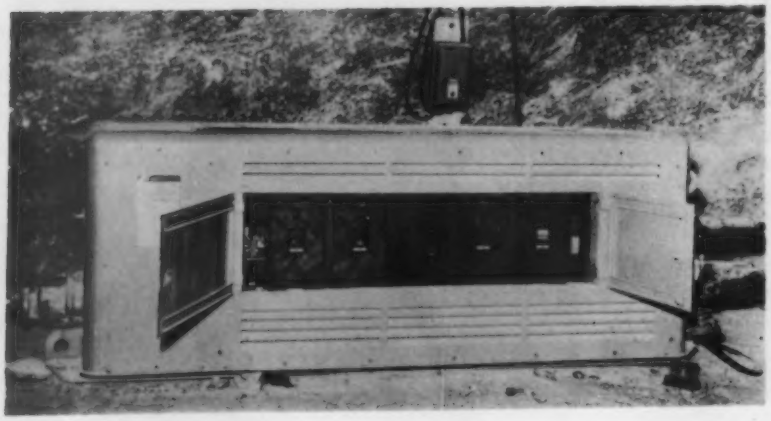


Fig. 5—An underground portable mine power center.

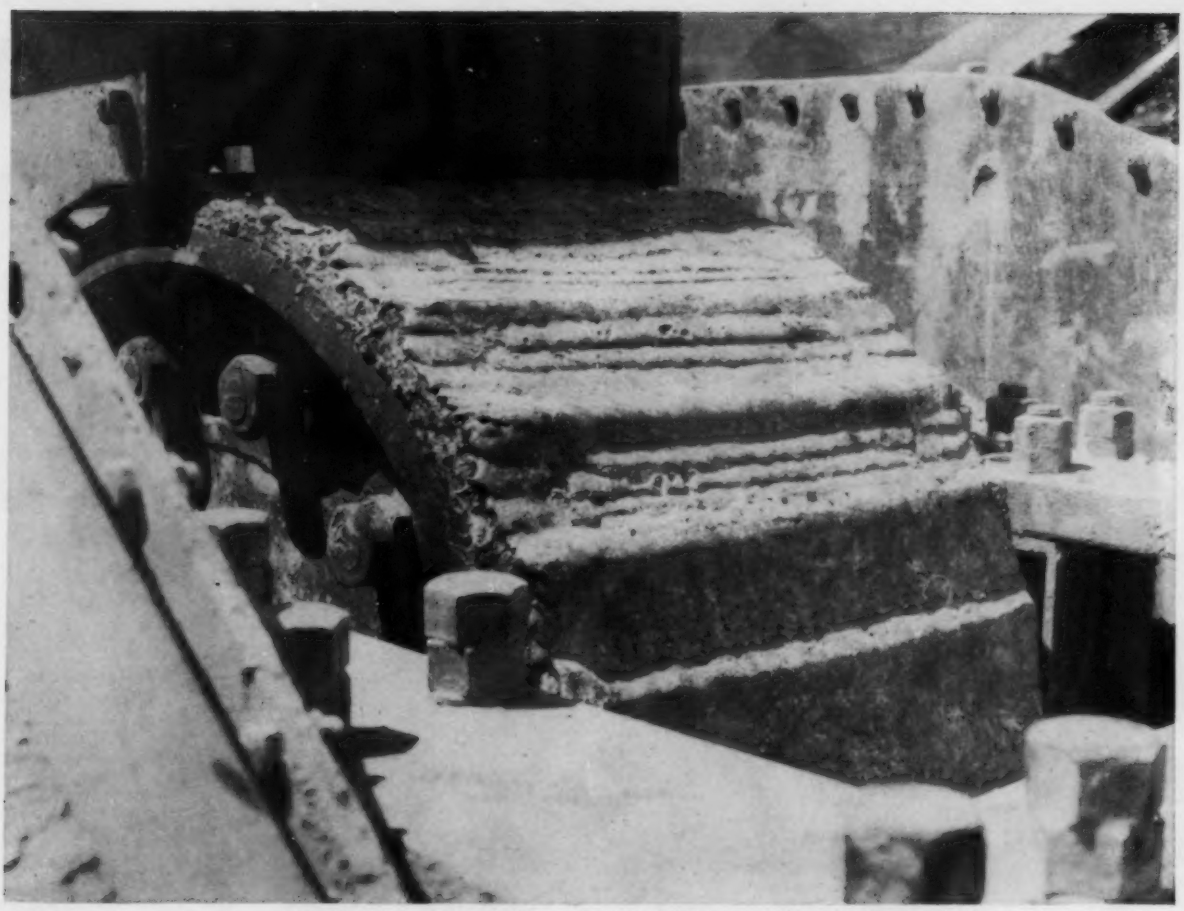
Underground power centers are provided in ratings from 112 to 500 kv.-a. The transformer is connected 2,400-volt delta or 4,160-volt wye on the high-voltage side, and 240- or 480-volt delta on the low-voltage end. Two 2½ percent ± voltage-adjusting taps are provided. Power center ratings are appropriate for serving a working mining unit, which usually consists of drilling and cutting equipment or one of the modern continuous mining machines, together with appropriate loaders, shuttle cars, and perhaps conveyor or car-loading apparatus.

D.-c. operated shuttle cars are supplied from the mine rail haulage trolley system or, in mines using conveyors, through dry-type selenium rectifier units operating from one of the 440-volt feeders of the power center. The remaining equipment is operated by three-phase alternating current.

Ground Fault Protection for Face Equipment

For 480-volt face equipment, some means of limiting voltage to ground of machine frames is required. This is accomplished by the use of a ground-protective scheme which limits machine frame-to-ground voltage rise during a fault to a value considered not dangerous to personnel and de-energizes the faulty circuits as quickly as possible.

The following system was developed originally to meet these requirements and is still used in many applications. The main power center secondaries are grounded through a current-limiting resistor. When secondaries are wye-connected, the neutral point is grounded to the frame of the power center through a resistor that limits maximum ground fault current to 5 amperes. On units with delta-connected secondaries, a zig-zag grounding transformer derives a source of ground current, and the current-limiting resistor is connected between the neutral of this grounding transformer and the power-



Since their last major rebuilding, this 18" x 30" Pioneer roll crusher has produced 30,000 tons of aggregate. Twice-a-week touch-ups with Stoody 100 hold wear to a minimum.

STOODY SEMI-AUTOMATIC HARD-FACING helps maintain road schedule in HIGH SIERRAS

A new 16½ mile State Highway between Shaver Lake and Huntington Lake in the high Sierras was recently completed by Phoenix Construction Co. of Bakersfield, California. One interesting feature of the job was the preparation of aggregate which was supplied by portable crushers operating near the site. Material used was quarried blue granite. Primary reduction was effected by jaw crushers followed by a final roll crushing operation. 210,000 tons of aggregate were required, as well as production of sand from the same material. Crusher rolls consequently suffered considerable wear.

The crusher corrugations were completely rebuilt with Stoody Manganese, spacing about 3" peak-to-peak. These were overlaid with Stoody 100 applied with the semi-automatic welder. Wear was never permitted to reach the manganese shell thereafter. During shut-downs, corrugations were retouched with Stoody 100, as required, restoring full efficiency for the following shifts.

Facilitating maintenance work is this portable semi-automatic welding machine. Quickly hauled to the site, it is dismounted from the truck for use.

Hard-facing methods for most successfully maintaining all your wearing equipment are fully described in the Stoody Guidebook and folder covering semi-automatic procedures. Ask your Stoody dealer for a copy (see the "Yellow Pages" of your phone book) or write direct.

STOODY COMPANY
11971 East Slauson Avenue
Whittier, California

CRUSHING WITHOUT RUBBING

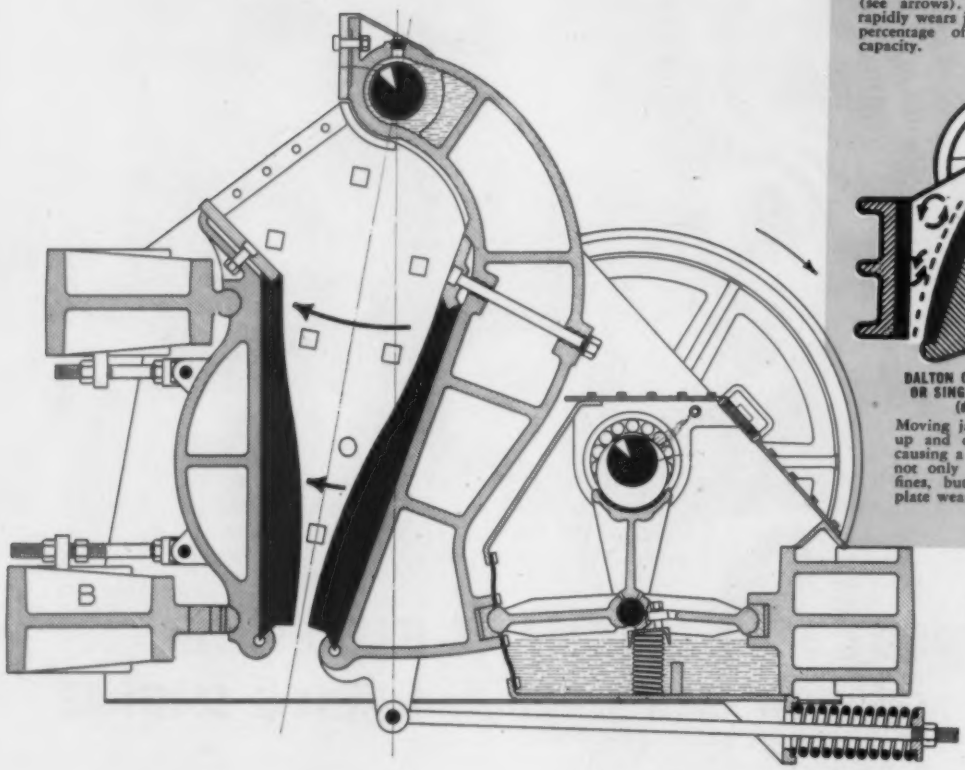
the first great improvement in JAW CRUSHERS in over 50 years

BLAKE OR DOUBLE TOGGLE CRUSHER
(designed 1858)

Note how swing jaw forces rock upward causing rock to rub against jaws (see arrows). This rubbing action rapidly wears jaw faces, increases the percentage of fines, and reduces capacity.

DALTON OVERHEAD ECCENTRIC OR SINGLE TOGGLE CRUSHER
(designed 1879)

Moving jaw forces rock both up and down (see arrows), causing a rubbing action that not only results in excessive fines, but causes heavy jaw plate wear and wasted power.



Until the Kue-Ken Jaw Crusher was developed, jaw crushers were either of the Blake or Dalton type (illustrated upper right) having the disadvantages of slow speed and a wearing, rubbing action of the jaw plates. The Kue-Ken crushes by pressure only, with no rubbing action (illustrated above). No capacity is lost by material being forced upwards with each stroke and wear and fines are reduced to a minimum. A faster, shorter stroke increases capacity and decreases the drop-thru of slabby pieces. Write for bulletin 5014.

PENNSYLVANIA

KUE-KEN® JAW CRUSHERS

PENNSYLVANIA CRUSHER DIVISION
Bath Iron Works Corporation
West Chester, Penna.

PE 246

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

PRELUBRICATED BELT CONVEYOR IDLERS, manufactured by *Transall, Incorporated,* are described in a bulletin containing features, dimensions, and illustrations. Other products manufactured by Transall are listed. (1)

TERRATRAC CRAWLER-MOUNTED TERRALOADER, Model 600, is the topic of a folder issued by the *American Tractor Corporation.* Features of the 1 cu. yd. capacity models are illustrated, and specifications and application photos are included. (2)

BULLETIN GT-314, a 35-page publication released by the *General Electric Company,* contains the latest carbide prices, how-to-order instructions, and specifies shapes subject to extra charge. (3)

THE CURRENT ISSUE OF "ROPEOLOGY", the *Macwhyte Company's* trade bulletin, features "PREmium" Whyte Strand wire rope. Special wire rope assemblies made of swaged fittings permanently attached to wire rope are mentioned. (4)

THE CHEMJECT SYSTEM OF CHEMICAL GROUTING to prevent water seepage into underground structures such as mines and pits is described in a booklet published by the *Chemject Corporation.* (5)

DUST CONTROL FOR INDUSTRY, a 16-page booklet just released by the *Pangborn Corporation,* contains drawings, photos, and descriptive information on Pangborn's complete line of dust control equipment. Standards of control and efficiency are outlined, and primary component parts of an engineered dust control system are listed. (6)

THE SERVICE-SCORE SYSTEM for controlling wire rope costs is explained in a folder published by the *Leschen Wire Rope Division, the H. K. Porter Company.* A sample set of Service-Score stickers is sent with the folder. (7)

SERVICE BULLETIN NO. 16, available from the *Cummins Engine Company, Inc.,* tells how to provide the amount and kind of air an internal combustion engine needs in order to give its best performance. (8)

CATALOG A, covering equipment for mine and quarry transportation, is offered by the *Easton Car & Construction Company.* Pan type trailers and drop-door side-dumps are pictured and capacities are given. An Easton electric dumping system is illustrated. (9)

TYPE MB PULVERIZER, developed in Germany, is described in a brochure available from the *Foster Wheeler Corporation.* Dimensions, capacities, features, and illustrations describe the pulverizer completely. (10)

MODERN PRACTICES IN ROTARY KILN INSTALLATION, an informative booklet published by the *Leeds & Northrup Company,* includes a diagram showing how L&N instruments and controls are applied to a typical kiln. Each L&N instrument is illustrated and described. (11)

FUEL BURNING SYSTEMS is the title of a new 6-page bulletin available from *Orr & Sembower, Inc.* The bulletin de-

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if mailed in the United States

THREE CENTS POSTAGE WILL BE PAID BY

Pit and Quarry Publications

431 South Dearborn Street

CHICAGO 5, ILL., U.S.A.

JANUARY, 1957

Please send more information on circled items described in this issue

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

In addition I would like information on:

_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

scribes a fuel burning system—a complete, packaged combustion assembly. Three actual installations of the equipment are pictured and described in detail. **(12)**

SPLICES AND TERMINALS made of rubber-insulated, neoprene-jacketed power and control cables are described in an illustrated booklet available from the *United States Rubber Company*. Instructions for splicing and terminating different types of cable are given. **(13)**

A REVISED CATALOG of conical scrubbers, Bulletin No. 37-B, has just been published by the *Hardinge Company, Inc.* The catalog contains a complete description of the Hardinge scrubber with ratings and dimensions, as well as approximate capacities in operation. Applications are discussed and installations are pictured. **(14)**

A NEW REDUCTION CRUSHER, the TF gyratory, has been announced by the *Traylor Engineering & Manufacturing Company*. Bulletin 127 contains the features and illustrations of the TF gyratory crusher. A chart showing sizes and capacities is included. **(15)**

MICHIGAN TRACTOR SHOVELS are pictured in a folder released by the *Clark Equipment Company*. Features and capacities of six models are given in addition to a condensed list of specifications and application photos. **(16)**

APPLICATION ENGINEERED, a 20-page general bulletin offered by *Dorr-Oliver Incorporated* details the complete line of Dorr-Oliver pumps available to industry. It describes the characteristics, construction materials, types, sizes, and capacities of the different models, and includes performance range and power requirements. **(17)**

BULLETIN 561, published by the *A. H. Emery Company*, features possible arrangements of Emery tank and bin weighing systems. The bulletin describes the recently-developed weighing system "package" which includes a selection of instrumentation of eight different manufacturers, as well as the Emery cell. **(18)**

THE BAUGHMAN LINE OF BULK TRANSPORT BODIES is featured in a catalog available from the *Baughman Manufacturing Company*. The bulk-mobile transport body, the "New-Matic" transport body, the bulk cement body, and the hopper-type bottom dump and side dump transport body are included. **(19)**

NEW "WOBBLER" FEEDER LITERATURE covering a wide range of sizes of this product has been announced by the *Universal Engineering Corporation*. "Wobbler" action is said to remove as much as 96 percent of fines from oversize through spaces between bars, even in wet material. **(20)**

THE COMPLETE LINE OF TELESCOPIC HOISTS manufactured by the *Galion Allsteel Body Company* is described in a new catalog. The catalog describes and illustrates various Uniscopic single-front mounted and Duoscopic twin front mounted telescopic hoists. Descriptions and specifications cover 9 hoist models, with payload capacities from 9 to 34 tons. The illustrated catalog contains action, detail, and cutaway photos. Matching bodies and payloading accessories are also shown. **(21)**

JANUARY, 1957

Please send more information on circled items described in this issue

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

In addition I would like information on:

_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if mailed in the United States

THREE CENTS POSTAGE WILL BE PAID BY

Pit and Quarry Publications

431 South Dearborn Street

CHICAGO 5, ILL., U.S.A.

Hook up your holes for *better digging*

PRIMACORD®
DETONATING FUSE

This hole is awaiting *your* orders. It is loaded and ready to "go," but it won't "listen" to stray electric currents, or even to lightning . . . it's primed with Primacord.

When it does go, it will fire in its proper sequence because it is hooked up to a Primacord trunk line which connects all holes in a fire pattern designed to insure relief of burden — produce better fragmentation, *better digging.*

THE ENSIGN - BICKFORD COMPANY
Simsbury, Connecticut • Since 1836

Primacord® Detonating Fuse, Ignitacord®, Quarrycord, Safety Fuse, Pyrotechnical Devices and Blasting Accessories

The square knot is used only *above ground,* to lengthen a trunk line of Plain or Reinforced Primacord, or to tie in Primacord M S Connectors. It must be drawn up tight.

Plain Primacord Trunk Line. Is used also for shallow holes — wherever resistance to abrasion and cutting is not required. Textile covered, flexible, resilient, with a tacky non-slip surface. Tensile strength 140 lbs — 1000 ft. spool weighs 17 lbs.

Plastic Wire Countered Primacord Branch Lines — Used in deep, ragged holes — and especially where metal or rigid fibre explosives containers are used — wherever strength and resistance to abrasion and cutting are essential. Armored with wire and covered with plastic material. Tensile strength 300 lbs — 1000 ft. spool weighs 33 lbs.

The knot shown is the clove hitch made in the Plain Primacord trunk line and drawn tightly around the twin branch lines.

P-1

center frame. From the frame side of this resistor a ground wire is carried to a ground trip coil of each feeder breaker and hence through this coil to the frame of the machine supplied by the breaker. The power wires to the machine and the ground wire are carried in the same cable. The incoming high-voltage cable to the power center also carries a ground wire which is connected to the power center frame.

At surface substations, a protective ground is established and the substation transformer secondary is grounded through a current-limiting resistor to the protective ground. The establishment of a low-resistance protected ground at the surface is more easily accomplished than underground. In effect, the ground wire of the high-voltage cable brings the ground point to the ground-wire terminal of the 480-volt grounding resistor. In the event of a phase-to-frame fault on a 480-volt machine at the face, the fault current is limited to 5 amperes by the resistor. Voltage-to-ground of the machine frame is therefore held to the maximum of 5 amperes times the ground wire impedance in the cable, which for cable lengths anticipated is 10 volts or less.

The ground trip coil to which the ground wire of the face machine is connected trips the breaker at 3.5 amperes, and has a continuous rating of 5 amperes. This coil is mounted in the breaker enclosure in a position over one of the breaker poles. The coil trips the breaker by means of its plunger engaging the latch on the breaker trip bar.

Further refinements of the general grounding system have subsequently been made. In recent installations, the grounding system employs a "ring" or "doughnut" type ground-detecting transformer and relay. The three power conductors of a load feeder pass through the iron opening of this transformer and the ground wire is carried outside the iron core. The secondary winding of the transformer is connected to a relay, and the relay contacts are connected in the under-voltage trip-coil circuit of the breaker. For a phase-to-frame fault on the face equipment, ground-fault current passes through one of the conductors in the iron core and returns by the ground wire outside the iron core. This causes a voltage in the secondary winding of the ground-detecting transformer, which in turn operates the ground-current relay, and trips the breaker.

When unbalanced a.-c. loads occur, or single-phase loads where no ground fault is present, no voltage is developed in the secondary of the ground detecting transformer because current that passes through the opening in one direction also returns through the same opening.

This general scheme is useful in most cases where the a.-c. ground wire is subject to d.-c. currents. In installations with both a.-c. and d.-c. power, misoperation of the breaker due to d.-c. currents in the ground wire is prevented since there is no tripping element in series with the ground wire.

Haulage Drives

Haulage of ore from the mine face to the shaft bottom area of the production hoist is accomplished by either main-line conveyor or underground rail systems. Conveyor systems are operated with squirrel-cage motors and industrial-type starters at 440 volts. The starters incorporate full- or reduced-voltage starting and overload and low-voltage protection, and employ air contactors.

For underground rail haulage systems, d.-c. mining locomotives operate from a 275-volt d.-c. trolley. Rails are bonded to supply a low-resistance return path. Formerly, direct current was obtained by motor-generator sets in underground rooms.

More recently, the operating economies and the maintenance-free features of the ignitron rectifier have made it an almost universal underground d.-c. supply. These rectifiers are composed of a co-ordinated assembly of equipment on three cars of appropriate dimensions, which are lowered through the shaft and moved about readily. The first car contains the main incoming a.-c. circuit breaker and an auxiliary transformer with fuse disconnects to supply low-voltage alternating current for the rectifier auxiliaries and lighting. The second car contains the rectifier transformer, and the third houses the ignitron rectifier tubes, the d.-c. output circuit breaker, and the cooling system for the rectifier tubes.

With the long rail hauls and grades encountered in the mine, the minimum voltage drop must be maintained on the trolley circuit to permit maximum utilization of locomotive capacity for ore hauling. This calls for careful location and movement of rectifier stations, since the advance of the working faces changes the electrical demand.

Mine Hoist

The production hoist is the vital link transporting ore from the base of the shaft to the surface. These

Fig. 6—An electric mine locomotive and cars.

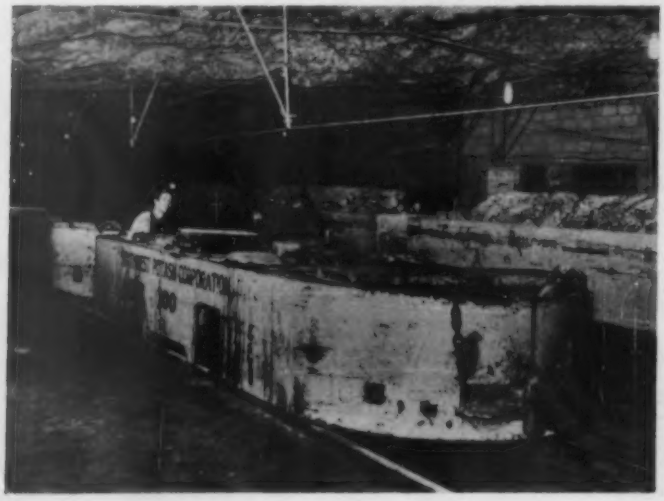


Fig. 7—Power center in a refinery.

Fig. 8—A rotary dump for dumping ore into a crusher bed.

hoists are generally of the balanced type, with two skips operating in a vertical shaft at speeds up to 1,600 f.p.m. and with loads up to 13 tons. Such a hoist has a capacity of approximately 15,000 tons per three-shift day.

These production hoists are generally driven by adjustable-voltage drives employing reversing d.-c. motors, each with its associated d.-c. generator. The generators are driven by synchronous-type m.-g. sets. Eighty-percent power factor synchronous motors are used to provide power factor correction within the plant system.

Control of these adjustable-voltage systems incorporates rotating speed regulators that provide flat speed-torque characteristics at the desired operating speeds. Current-limit regulators provide the desired torque for acceleration and retardation. These are of the rotating or magnetic-amplifier type. The use of a torque-limit feature not only assures proper torque throughout the accelerating period to provide top performance, but also protects the mechanical system of the hoist against stresses caused by excessive torque applications.

Automatic operation of production hoists can be incorporated as follows: a skip makes a trip after it has been loaded at the bottom; the load is automatically dumped at the top; and the hoist waits until the companion skip is filled, whereupon the next trip is automatically initiated.

At shift-change time, the production skip may be converted to a passenger skip and operated under manual control at reduced speed to bring men to the surface and take the next shift into the mine. However, miners working at points remote from the shaft bottom generally assemble at one of the auxiliary man-and-material hoists located nearer the working faces. These hoists are, in most instances, driven by a.-c. wound-rotor motors with full magnetic reversing control. They are of smaller capacity than the production hoists and are under the control of an operator.

Ore Processing

When ore reaches the surface, it is conveyed either to the appropriate storage bins or directly into the processing operation. Throughout milling and refining processes, the ore is handled numerous times on conveyors of various lengths. These conveyors generally are driven by line-started squirrel-cage motors operating on the 440-volt system.

One of the first refining processes is primary grinding, followed by further grinding of ore in a ball or rod mill. Such mills usually are driven by synchronous motors—80 percent power-factor machines to provide power factor-correction. This is highly desirable in view of the concentration of inductive-motor loads in the plant.

Many of the treating processes use flotation cells, in which a finely crushed mixture of ore and brine combined with certain chemical reagents is placed in tanks; the mixture is agitated and caused to froth by the insertion of air bubbles at the bottom of the tank. Flotation cells usually employ squirrel-cage motors of 5- to 7½-hp. rating. These motors operate in a high-moisture at-

(*Continued on page* 289)

Table I—Typical Face Equipment Drives

Machine	Horsepower	MTR Type	Control
Drill (Jumbo)			
Drive	26	Squirrel Cage NEMA B	Full Voltage Start
Fan	.75	Squirrel Cage NEMA B	Full Voltage Start
Cutter	50-75	Squirrel Cage NEMA C	Full Voltage Start
Loader			
Drive	50	Squirrel Cage NEMA D	Full Voltage Start
Pump	6	Squirrel Cage NEMA B	Full Voltage Start
Shuttle Car			
Traction	Two-10	D.-c. Series	Series Start—Parallel Run Dynamic Brkg.
Conveyor	10	D.-c. Compound	
Hyd. Pump			Full Voltage Start
Continuous Miner			
Cutter Motor	Two-65	Squirrel Cage SPCL	Full Voltage Start
Hyd. Pump	10	Squirrel Cage NEMA B	Full Voltage Start
Conveyor	Two-3	Squirrel Cage SPCL	Full Voltage Start
Tramming	Two-7.5	Squirrel Cage SPCL	Full Voltage Start
Fan	5	Squirrel Cage NEMA B	Full Voltage Start

Table II—Typical Refinery Equipment Drives

Machine	Horsepower	Motor Type	Control
Crusher	75-125	Squirrel Cage NEMA C	Full Voltage Start
Rod Mill	150-250	Synchronous Wound-Rotor	Full or Reduced Voltage Start Secondary Resistance Starting
Classifier	15	Squirrel Cage NEMA B	Full Voltage Start
Flotation Cells	5-7½	Squirrel Cage NEMA B	Full Voltage Start
Conveyors	3-75	Squirrel Cage NEMA B or C	Full Voltage Start
Kiln	15-40	Squirrel Cage NEMA C D.-c. Compound	Full Voltage Start Adjustable Voltage
Centrifuges	150	Wound-Rotor	Secondary Resistance Starting
Fans	40-250	Squirrel Cage NEMA B Synchronous	Full Voltage Start or Reduced Voltage Start

Here's why more and more overburden is being handled with Planet-Power steered INTERNATIONAL® TD-24 crawlers!

See for yourself how a TD-24 can boost your operating profits! Compare seconds-fast, all-weather TD-24 gasoline conversion diesel starting—to slow methods that pile up costly delays. Note how Cerametallic engine clutch action reduces operating effort, gives top *power-transfer efficiency!* Measure TD-24 power-weight-traction balance against any other machine in any kind of footing. See what exclusive TD-24 Planet-Power steering does to increase *payload* and *job-speed.*

At the same time, prove the excavating and loading capacity, and *versatility unlimited,* of an International Drott Four-In-One Skid-Shovel. See your International Construction Equipment Distributor for a demonstration.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Crawler and Rubber-Tired Loaders... Off-Highway Trucks... Diesel and Carbureted Engines... Motor Trucks.

"Major reasons: capacity and service"

—Byron Construction Co., Clarksburg, W. Va.

This coal field contractor uses five TD-24's to clear right-of-way, build roads and strip overburden on a large bituminous coal-stripping operation near Lost Creek. The TD-24's remove an average depth of 90 feet of slate, limestone, sand, and earth overburden—to uncover 5-foot Pittsburgh and 8-foot Redstone, seams.

Four of the TD-24's are new, replacing four competitive crawler-dozer units. The other TD-24 in the fleet has done 7,500 hours of heavy, crawler-mauling coal field work—since '52!

"Work capacity and distributor service were major reasons for buying the four new TD-24's," reports Tony Petitto, Jr., for Byron Construction Company! ...Photo shows two of their new TD-24's—leveling spoil-bank so a dragline can "walk" to new location.

"TD-24's do more work, faster"

—Buckeye Coal Co., Hanging Rock, Ohio

On the extensive Buckeye Coal Company operation, near Ironton, Ohio, two large draglines, and two International TD-24's strip overburden 40 feet deep from the 40-inch "Ohio No. 5" seam. The operation produces 1,000 tons of steam coal daily.

"Our TD-24's do more work, faster, than other large crawlers we've had on the strip," states C. E. Collins, Buckeye Coal Company partner. "This performance explains our *repeat* buying. We replaced one TD-24 with a new one, added another new one, and have a third one on order."

Exclusive International Planet-Power steering gives you full-time "live" power on both tracks—to turn *under positive control,* pulling or pushing big payloads!

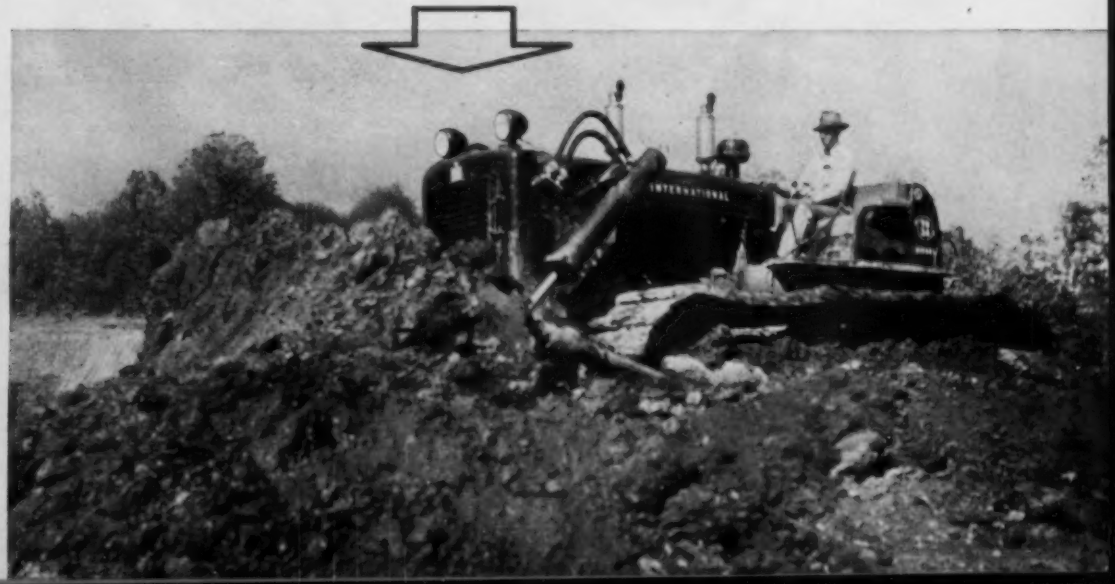
"TD-24 moves 1/3 more overburden"

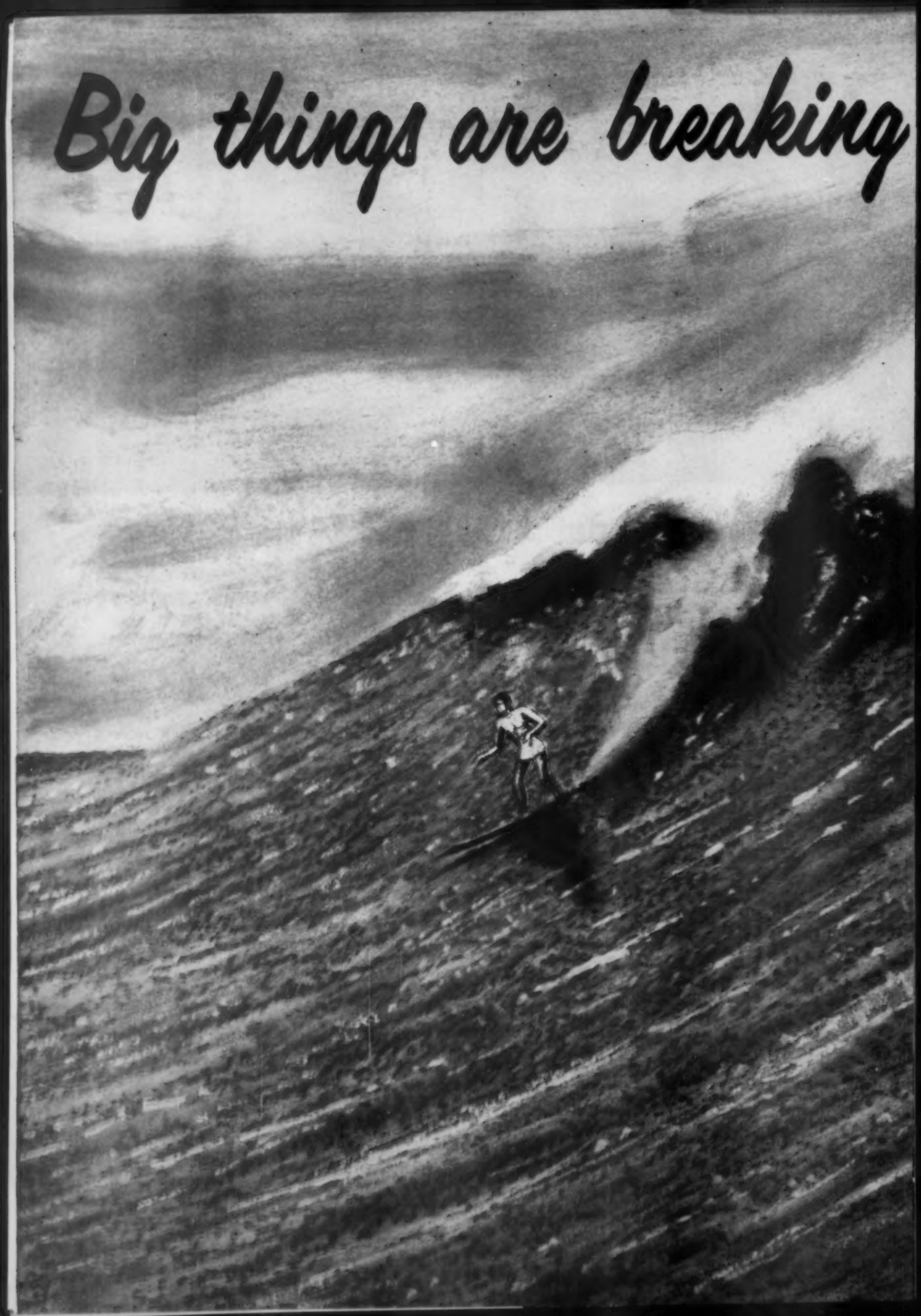
—B. and H. Coal Co., Spencer, Tennessee

Bonus capacity is the key reason why a TD-24 got (and keeps) this big dozing job near Spencer, Tennessee. Up to 35 feet of overburden are stripped to uncover the 4-to-8-foot "Swanee" seam.

The TD-24 with hydraulic tilt dozer, and a large power shovel team up on the stripping—to provide a profitable combination.

"Our TD-24 dozer is moving up to one-third more overburden daily, than previous large tractors," reports B. and H. Company partner, C. L. Brock. "This increase results from greater weight (for full-power traction), full-time power on both tracks while steering, and tilting blade to speed digging in hard materials."




Big things are breaking

at CEDARAPIDS!

See the new revolutionary
***Cedarapids* BITUMINOUS PAVER**
at the
1957
ROAD SHOW

A.R.B.A. ROAD SHOW
Cedarapids
BOOTH 723
180° TURNPIKE
10th Ave.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

Another ON THE SPOT Report

Standardized Semi-Portables Solve Aggregate Problem For Florida Sand Producer

Florida is blessed with almost unlimited natural advantages and resources, but its supply of aggregates is not one of these. Large areas of the state have limited supplies of suitable aggregates and must supplement these from distant sources. Central Florida, for example, has numerous deposits of sand but only a limited amount of coarse aggregates. The sand deposits are usually rather shallow, requiring either increasingly long hauls or frequent moving of the plants. The Mammoth Sand Company of Lake Wales, Fla., solved this problem by installing basically standardized plants which can be quickly taken down and reassembled in another location. Concrete, plaster, and engine sands are the major products.

The Mammoth Sand Company was formed in 1941 and has operated ever since in the area east of Lakes Wales. Every few years, as a deposit was worked out, the plants would be torn down and rebuilt at a a new location, at considerable expense and with a delay of several weeks in production. In 1952 the company installed a plant at a deposit five miles east of Lake Wales, known as the Mammoth pit. This facility was designed by the Frank M. Murphy engineering firm of Lake Wales.

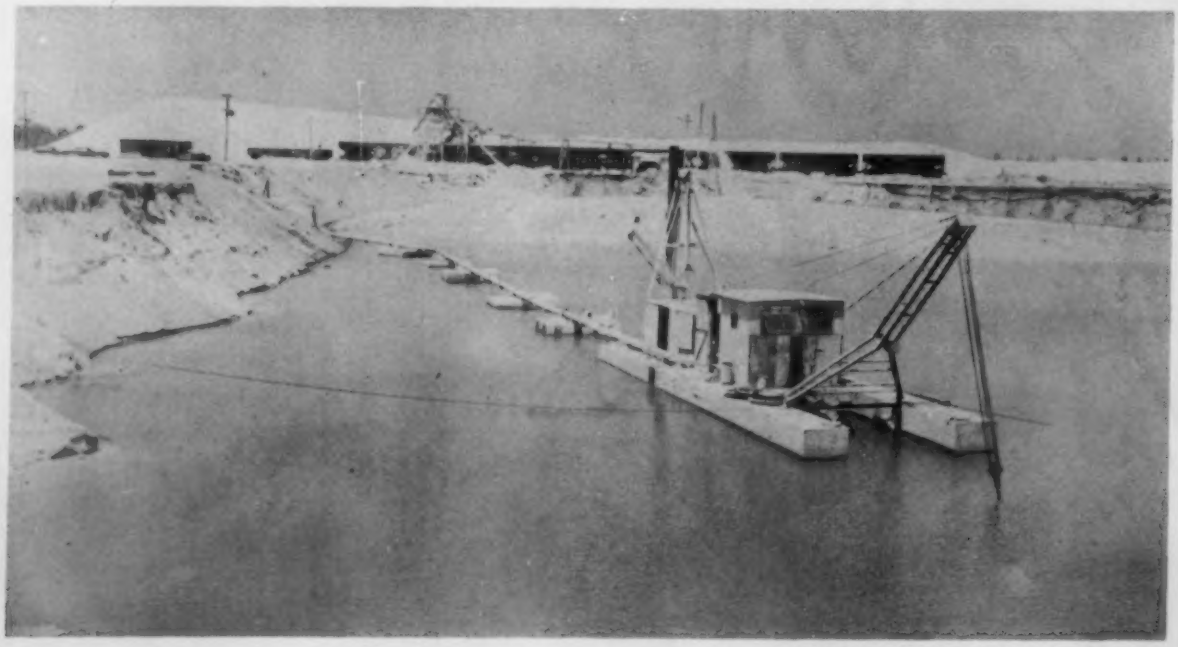
A semi-portable screening plant had been designed by this firm to meet the basic needs of the deposits typical of Central Florida. Several of these plants had been installed at different locations with minor changes to meet local needs. In October, 1953, a similar plant was installed at the Sandland pit three miles east of Lake Wales. These plants can be taken down and reassembled in another location in three to four days. They are of all-steel construction, mounted on concrete footings.

At the Sandland pit from 18 to 24 in. of the sandy overburden is removed in order to get rid of most of the roots. Any small amount of overburden remaining is run through the plant. The sand deposit extends about 15 ft. above the water level and is known to go down at least 70 ft. The deposit is a high-grade silica sand meeting all specifications for concrete but it varies in gradation and quality at different depths.

A sizable dredge pond has been developed. Recovery is by a suction dredge with a 10-in. Maddox pump driven by a 200-hp. electric motor. A straight suction pipe 55 ft. long, suspended from a boom, dredges to a depth of 40 ft. below the surface. The dredge has a 5-compartment, all-welded hull and a welded steel superstructure. It is equipped with a rear speed and two shorelines in front. The 12-in. discharge line is supported on welded steel pontoons and is at present 500 ft. long, with a 45-ft. lift to the top of the plant.

Sand and water are discharged at the plant into a receiving box. This breaks the force of the flow and spreads it out over a stationary screen with ⅜-in. openings, followed by a 4- by 8½-ft. Robins single-deck screen, also with ⅜-in. openings. The oversize contains most of the refuse and is chuted to a pile to be sold for use in driveways, etc.

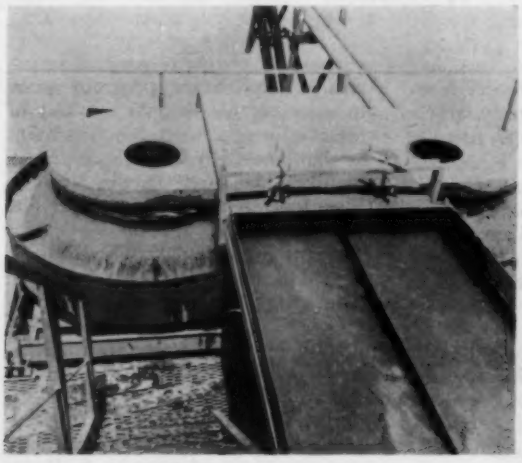
The minus ⅜-in. material through both screens goes to a flume from which it is split to a pair of 72-in.



This view of Mammoth Sand Company's Sandland, Fla., operations shows the dredge and plant (background).

The Sandland plant, showing the classifiers (left). Note the pivoted chutes beneath which load direct to cars on either track.

This 4- by 8½-ft. single-deck screen scalps out all material over ⅜-in.



The flume which carries all minus ⅜-in. material to a pair of classifiers. Note the control valves which regulate fineness.

The plant at the Mammoth deposit is similar in design to the Sandland plant.

Woods Auto-Vortex cone-and-bowl classifiers. These cones can be adjusted to produce material meeting a variety of specifications. This is done by means of a splitter valve ahead of the cones which regulates the amount of water going to the cones.

The fines overflowing the classifier are mostly minus 50-mesh; much of this is wasted back into a worked-out section of the pit through a pipe. Another pipe is used to feed the material to a pile whenever there is a demand for plaster sand and other fine sand. This fine material forms from 30 to 35 percent of the total product.

The coarser material discharged from the classifiers is concrete sand, which is chuted direct to railroad cars. Special balanced chutes make it possible to load from either cone to cars on either of two tracks. This change can be made in an instant, and this is done if the color or the grade of the sand changes while loading, particularly if pure white sand is being loaded. An experienced loader becomes very proficient at judging types and grades of sand. Up to 25 cars of 65 to 80 tons capacity are loaded in a 10-hour day. There is storage space for 15 cars on each of the two tracks, and the cars are moved and spotted by a car puller.

The Mammoth operation is very similar to that at Sandland. The dredge there also has a 10-in. pump with a 200-hp. motor, but the suction is only 35 ft. long as the deposit is only 40 to 45 ft. deep. The bank extends 10 ft. above water level. The plant has a stationary screen, a Link-Belt vibrating screen, and two 96-in. dia. Link-Belt cone classifiers. This deposit had previously been worked by another company, beginning in 1925.

Although these plants are only two miles apart, they are on different railroads. The Sandland plant is on the Seaboard Air Line Railroad; the Mammoth plant is on the Atlantic Coast Line Railroad. This arrangement makes direct shipments possible in all directions. Shipments are made regularly as far as Miami, Tampa, Sarasota, Fort Meyers, etc.

The Mammoth Sand Company has its offices at Pembroke, Fla., with W. R. Gooch as manager. This company is affiliated with Shands & Baker, Inc., of Jacksonville, Fla., as are a number of other producers in the central part of Florida.

This view of a face being prepared for blasting illustrates the nature of the highly folded formation being quarried by Lynchburg Stone Service. Strata in this area dip about 87 degrees.

Lynchburg Stone Service Erects 1,500 t.p.d. Plant

wide range of aggregates supplied to central Virginia markets

By BUREN C. HEROD

Another ON THE SPOT Report

INITIAL operations, early in 1956, of the new 1,500 t.p.d. crushed stone plant erected by Lynchburg Stone Service Corporation between Lynchburg and Concord, Va., represented a large step toward meeting expanding needs for construction aggregates in the central section of Virginia.

The Lynchburg organization, formed by Rockydale Quarries Corporation of Roanoke, Va., expressly for the purpose of establishing a producing facility in that area, has set up an efficient operation from which the output is currently largely consumed in highway and housing construction.

Designed by Keith and Gordon Willis, officers of the parent company, the new plant incorporates equipment and a processing flow specifically set up for the preparation of a range of relatively smaller aggregate sizes which appears to be in increasing demand and use in the Southeast. To accomplish this, plant processing involves two secondary crushing stages, as well as two finish screening phases.

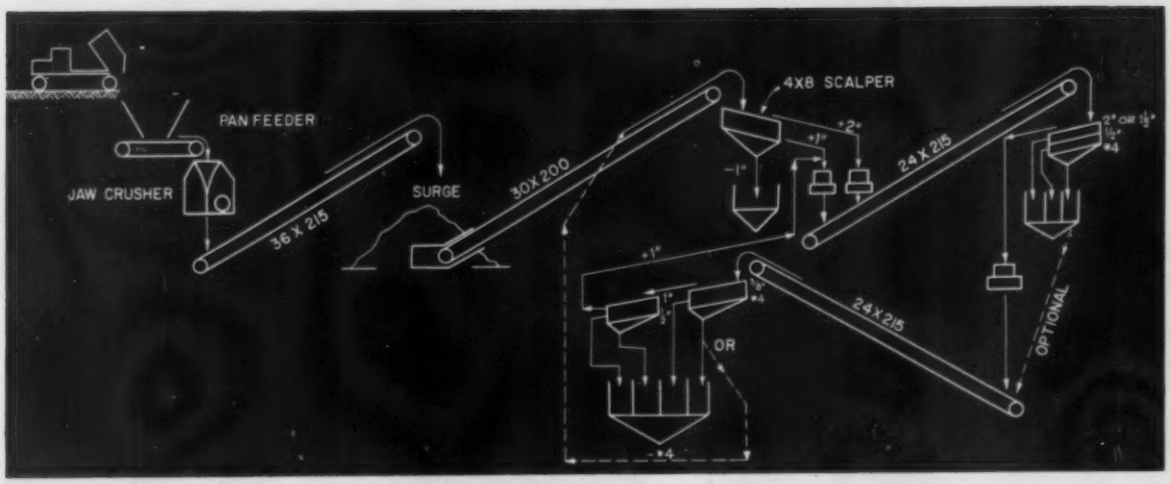
Since no limestone deposit considered economically feasible for operation was previously known in this section, the company pursued an extensive exploration program prior to opening this site. As a result of these efforts, a workable formation in the James River synclinorium—a highly folded area in the Virginia Piedmont— was proven out. The strata have a dip of about 87 degrees and, while relatively heavily bedded, are well filled with slippage joints. The several crushed stone products processed from this hard, dense formation have proven highly satisfactory in meeting all state specifications for aggregates.

Based on the results of the exploration program a 23-acre plant site was acquired near U. S. Route 460 and the main line of the Norfolk & Western Railroad, five miles from the towns of Lynchburg and Concord. On this site a company crew began setting up the new crushing-and-screening plant in June, 1955.

In January, 1956, on a leased tract adjoining the plant property, ramping was started into the quarry area. Since overburden was one of the prime factors evaluated in the selection of the quarry site, operations were initiated in an area that has a cover of only about 5 ft. Removal of the latter is accomplished with an 8-cu. yd. LeTourneau-Westinghouse Model D scraper.

Two Gardner-Denver Airtrac drills, a DH123 and a DH99, are employed in the primary drilling. The blast hole pattern drilled by the former has a 9-ft. spacing and an 11-ft. burden, while the latter follows an 8-ft. spacing and a 10-ft.

Loading operations in the new quarry developed by Lynchburg Stone Service Corporation between Lynchburg and Concord, Va.



Flow diagram of Lynchburg Stone Service's new crushing and screening operations, showing the processing phases.

burden. Atlas 40 percent extra explosive is used in blasting a 50-ft. face, and yield has averaged about 3 tons of stone per pound of explosive. Secondary drilling is done with Gardner-Denver S55 jackhammers.

In the quarry broken stone is loaded out by a 1½-cu. yd. Northwest Model 6 diesel shovel into three 15-ton Model 536MD end dump Euclids. With a hauling distance of about 1,100 ft. between shovel and primary crusher on the adjoining plant site, these three trucks deliver an average total of about 150 t.p.h. The crew carrying out the one shift daily quarry operations consists of a pit man, a shovel runner, three drillers, and a powder man.

At the plant site the quarry trucks dump into a hopper from which the stone is conveyed to the primary crusher on a 4- by 10-ft. Jeffrey vibrating feeder. The primary crusher, a 30- by 42-in. Lippmann jaw, is driven by a 125-hp. Reliance electric motor. Reduced through a 5-in. setting, the primary crusher product is transported on a 36-in. Lippmann belt conveyor with 215-ft. centers to discharge on a surge pile which is maintained at about 3,000 tons.

Crusher run material is reclaimed from the surge pile on conveyor No. 2—a Lippmann unit with a 30-in. belt and 200-ft. centers—the first section of which is housed in a tunnel constructed of 102-in. dia. Armco multi-plate pipe. Material is fed onto the No. 2. conveyor from the overlying surge by a Jeffrey vibrating feeder.

The reclaiming conveyor discharges onto the scalping screen, a 4- by 8-ft. Tyler Ty-Rock equipped with 2-in. top and 1-in. bottom deck screencloth. The plus 2-in. material scalped on the top deck is chuted to a 4¼-ft. Nordberg-Symons cone crusher with coarse bowl, while that retained on the bottom deck is chuted to a 3-ft. Nordberg-Symons Short Head crusher.

These two crushers represent the first of the two secondary crushing stages. With each being fed a different scalped fraction, they have provided a high ultimate capacity of the desired smaller aggregates.

Minus 1-in. stone passing the scalper's bottom deck drops to one compartment of an underlying 2-compartment, 100-ton bin from which, as the first finished product removed from the flow, it is drawn into trucks for customer delivery or hauled to the plant stockpile. The same bin is also supplied from two final finishing screens described later.

Material reduced in the first two secondary crushers is discharged on conveyor No. 3—a Lippmann unit with 24-in. belt on 215-ft. centers—for transport to the first of the three finishing screens. Mounted over a 3-compartment bin, this screen, a 5- by 12-ft. triple-deck Seco, is equipped with a 2-in. top, ½-in. middle, and No. 4 mesh bottom deck.

Fractions separated on the lower two decks are chuted to the respective underlying 50-ton bin compartments, while the plus 2-in. material retained on the top deck is chuted to a Symons 3-ft. fine bowl crusher,

The 30- by 42-in. primary jaw crusher installation on the 23-acre plant site.

A view of the plant from the raw feed end, showing the surge pile (foreground) and all screening towers.

The scalper (left) and the final finishing screens (right). Between the two towers are installed the two cone crushers that accomplish the first secondary reduction.

The crusher at lower center provides final secondary reduction. Mounted over the bin is the initial unit of the three finishing screens.

where it is reduced to a top size of 1 in. This accomplishes the final secondary crushing.

At this second point of separation of finished products from the flow, materials are trucked to job or plant stockpile from the above bin.

The 1-in. top size product of the fine bowl crusher is transferred to the final finishing screens, mounted on a tower ajoining the scalper and first secondary crushers, on conveyor No. 4. All four conveyors connecting the various processing phases are driven by 20-hp. G-E gearhead motors.

The final two finishing screens, both 4- by 10-ft. Tyler Niagaras, are double-deck units and mounted in series. With ⅜-in. top and No. 4 mesh bottom deck screencloth on the initial screen, the products known as No. 12 and dust are first removed prior to feed to the second screen. One or both of these materials may be conveyed to the scalper if desired to correct crusher run fines.

On the second screen a separation is effected with a 1-in. top and ½-in. opening lower deck of No. 7 (1- by ½-in. plus No. 11) and No. 11 (½-in. by No. 4 blended). These are chuted, along with the finer products of the first screen, to the respective underlying bin compartments that have individual 50-ton capacities. The nominal amount of plus 1-in. material retained is chuted to the 3-ft. Short Head crusher to join the scalper's bottom deck fraction.

All bins are located parallel and adjacent to the conveyors, so that material may be pulled from any bin for blending into another size.

Stockpiled materials are rehandled for loading into haulage trucks by a Michigan 125A front-end loader. At present, the plant is making five basic products—crusher run, No. 7, No. 11, No. 12, and ballast—and all finished materials are delivered by contract haulage. These trucks are weighed out on a Fairbanks-Morse 30-ton beam scale.

In addition to the crushing and screening facilities, other installations on the plant site include a sheet-metal garage and repair shop, office and weigh station, as well as a compressor station supplying the two Gardner-Denver quarry drills. A pair of 500-c.f.m. Ingersoll-Rand compressors have been installed for this purpose.

Three of 69 standard model 25-ton Dart Trucks—all equipped with Fuller 4-MS-1440, 4-speed Transmissions—owned by Southern Peru Copper Corporation. This is part of a $2½-million order for 90 units, one of the largest of its kind ever placed.

FULLER Transmissions specified on $2½ MILLION TRUCK ORDER!

The Southern Peru Copper Corporation has ordered a fleet of 69 standard model 25-ton Dart Trucks, *all* equipped with Fuller 4-MS-1440, 4-speed Transmissions. This is part of a $2½-million order for 90 units, one of the largest of its kind ever placed.

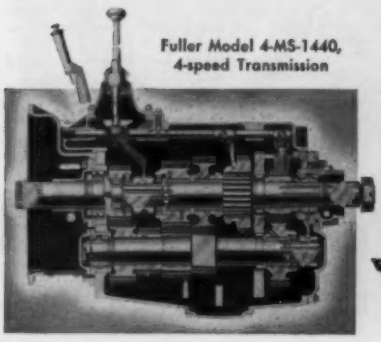
These trucks will be used for a dual purpose in the development of the huge Toquepala and Quellaveco copper deposits in southern Peru. First, they will help to remove the initial overburden, and later will haul copper ore from the open pits to the mine's concentrator.

The big, rugged, heavy-duty, off-highway Dart trucks—specifically developed for mining operations such as this—are designed and built to haul top payloads profitably, over the roughest terrain.

It is only natural then, that a dependable, durable, transmission was carefully selected to efficiently and effectively deliver power from the 335 hp Cummins N.R.T. Turbocharged diesel engine, through a Twin Disc Model CO Torque Converter. *That's why Fuller was specified!*

On job after job, where loads are the biggest and going is the toughest, you find Fuller Transmissions *putting horsepower to work efficiently and economically.*

Next time you order heavy-duty construction equipment, *specify* Fuller Transmissions. From over 110 models available for rubber-tired equipment, there's a Fuller Transmission designed to do *your* job.

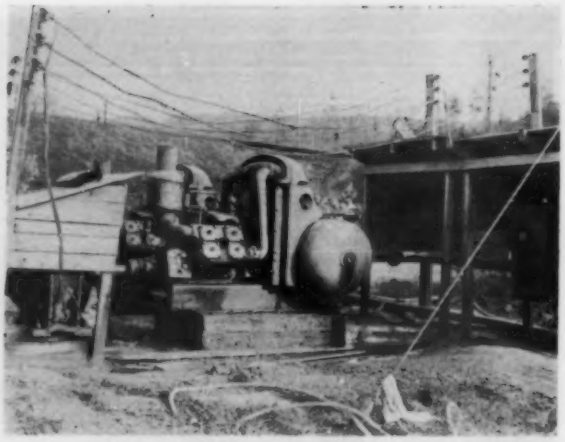


Fuller Model 4-MS-1440, 4-speed Transmission

FULLER MANUFACTURING COMPANY
Transmission Division, Kalamazoo, Michigan

Unit Drop Forge Division, Milwaukee 1, Wisconsin • Shuler Axle Company, Louisville, Kentucky (Subsidiary) • Sales & Service, All Products, Western District Branch, Oakland 6, California and Southwest District Office, Tulsa 3, Oklahoma.

Left: Jim MacDonald, superintendent of the new facility.



Right: The quarry drills are supplied air from the central compressor station, comprised of these two 500-c.f.m. units.

Superintendent of this new facility is Jim MacDonald, a relative newcomer. Despite the fact that the plant has been in operation less than a year, company officials and Mr. MacDonald have already taken under consideration plans for expansions of certain phases of the operation. When put into effect, these will increase the company's ability to service its growing market, with respect to both an increased product range, and material handling.

Big Lakeside Dock Erected For Canadian Cement Firm

A 975-ft. dock for the Lake Ontario Portland Cement Company Ltd. at Picton, Ont., will be constructed by Dravo of Canada Limited, Toronto. The dock is located about 40 miles west of Kingston.

Primary use of the dock will be in handling shipments of bulk cement from the Picton plant to bagging plants at Rochester, N.Y., and Toronto. Lake Ontario Portland Cement Co. also plans to ship commercial limestone aggregates from Picton to Great Lakes ports.

Compania Venezolana de Cemento, Venezuela's largest portland cement producing firm, has begun construction of an additional branch for the processing of gypsum. The new plant will have a capacity of 100 metric tons per day. Domestic production of gypsum will cut the price of cement by 79 cents a bag.

There's a heavy conveying system atop these Neff and Fry Bins

SUPER-CONCRETE STAVE STORAGE BINS

A continuous reinforced concrete roof on the six 20' x 52½' bins carries a big screw conveyor with piers, chutes, etc. Observe that there are no additional supports from the ground. The bins themselves support the entire load.

This strikingly proves the load-bearing strength of Neff & Fry Bins. Of course, the bins also have the lateral strength to contain 4,000 tons of grain.

The walls of Neff & Fry Bins are constructed of Super-Concrete Staves. For a complete understanding, read our folder, "Bins With the Strength of Pillars." Ask for it now before you forget.

NOT EXPORTED EXCEPT TO CANADA AND MEXICO

THE NEFF & FRY CO.

278 ELM ST. • CAMDEN, OHIO

UPI OUTPUT ... Dredging the Modern Way with New Suction Dredge Agitator*

AGIPELLER*

*(TRADEMARK) *Pat. Pending

Oscillating cutter assembly shunts aside oversize . . . keeps nozzle clear, in most deposits.

Strong teeth cut and loosen compacted deposits.

Oversize stones wedging in nozzle are crushed and eliminated.

A durable, double-duty digger and screener that loosens compacted deposits and prevents clogging. Low first cost, minimum upkeep. Ideal for portable dredges.

Manufactured only by

W. H. PFARRER COMPANY

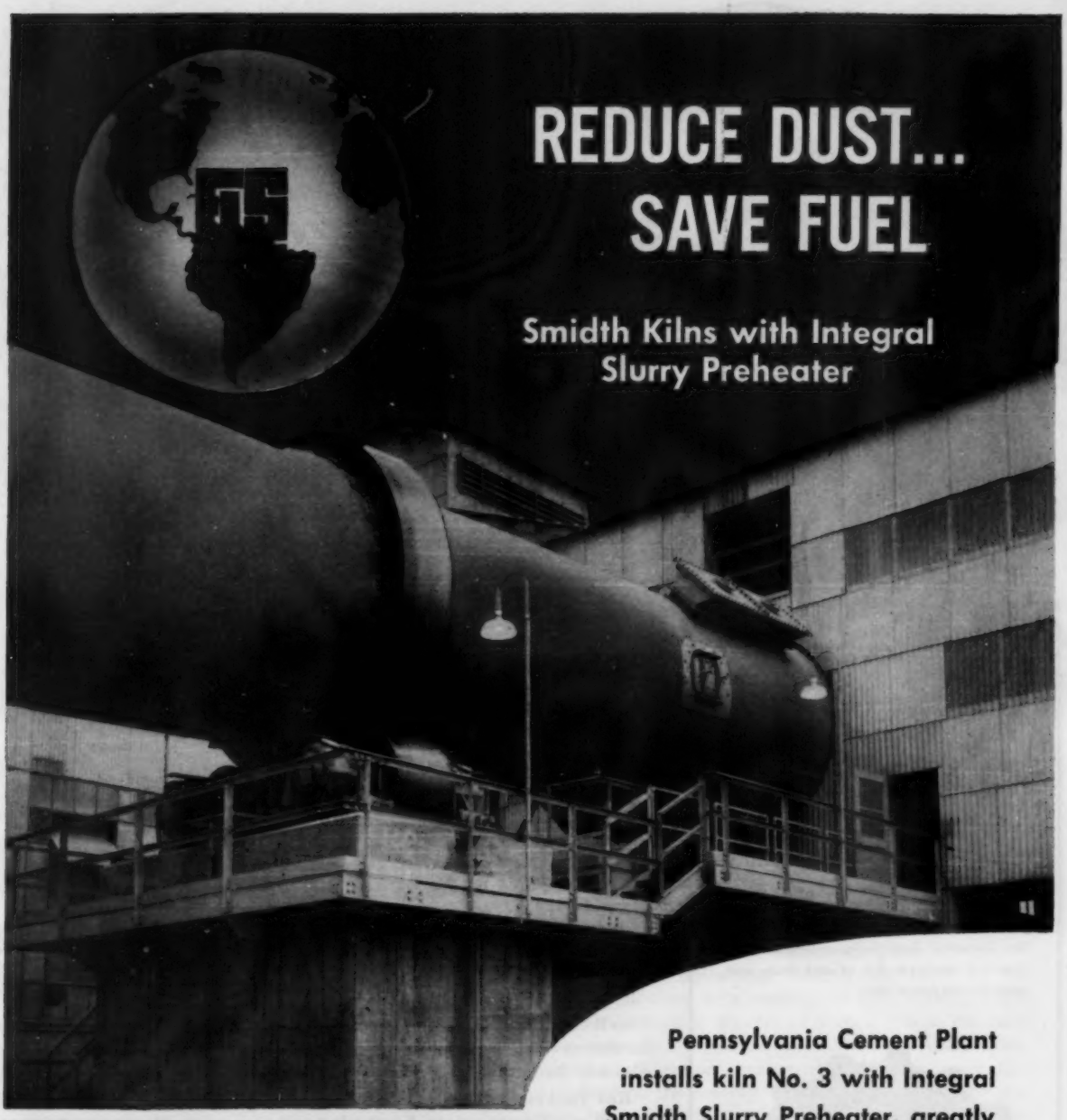
Dredge and Pump Engineers

211 W. Wacker Drive

Chicago 6, Ill.

RAndolph 6-7174, 6-7175

COSTS DOWN!



REDUCE DUST... SAVE FUEL

Smidth Kilns with Integral Slurry Preheater

Pennsylvania Cement Plant installs kiln No. 3 with Integral Smidth Slurry Preheater, greatly reducing dust loss and fuel consumption.

Smidth

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

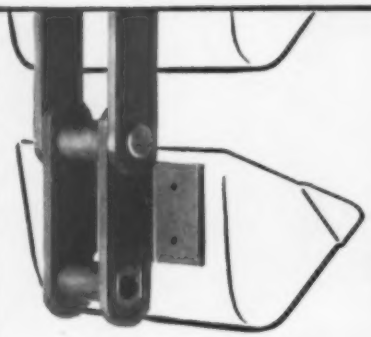
F. L. Smidth & Co.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India



For longest service in severe conditions, Rex Chabelco® Steel Chains outlast all other chain. A complete line of cast chain and sprockets also available.

You'll cut down time even more by using Rex Segmental Sprockets. These sprockets can be installed without removing shaft or bearings. Rim sections bolt on to the body while the chain is suspended.

Tough Rex Elevator Buckets give longer service at lower cost!

You'll eliminate frequent replacements and cut down time to an absolute minimum with buckets designed especially for rugged service—Rex Elevator Buckets!

Rex Buckets deliver longer service because they're harder and reinforced at all wear points. Front edge and corners are double-thick, and backs extra-heavy to prevent bolt "tear-out."

Rex Buckets are well rounded to assure complete, fast loading and discharge. These buckets are made to highest standards...cast from patterns held to exact tolerances. Every bucket is accurate in all dimensions, size and volume.

Your choice of two quality metals available—tough Rex Malleable iron for average service, or wear-defying Rex Z-Metal for highly abrasive or corrosive service. For the complete story, write CHAIN Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CHAIN BELT COMPANY

District Sales Offices in principal cities

MAXIMUM SHOVEL OUTPUT on upper Beauharnois lock construction is maintained by fast, easy-loading International "95" PAYHAULER units. High tensile steel sides, triple section bottom, super-duty "spring cushions" plus strongest frame in "95's" class stand up to repeated pounding of big rock.

11 rock-speeding Payhauler® Trucks

STAR IN SEAWAY'S BIGGEST, SINGLE SHOW!

Eleven International "95" PAYHAULER units...because of their high speed, big pay-capacity and around-the-clock endurance...are playing the starring roles in the St. Lawrence Seaway's biggest, and probably toughest, single show!

The 24-ton capacity PAYHAULER units are sparking a demanding monthly production schedule of 220,000 cu yd of rock and earth. The scene is United Waterways Constructor's $14½ million, 2½ million yd contract of the upper Beauharnois lock construction and channel excavation near Montreal, Quebec.

PAYHAULER units also loaded out most of the rock for fill from cuts made on a lower Beauharnois lock. On a similar shorter-haul rock job in the midwest recently, two identical PAYHAULER units maintained a production average of 2,400 cu yds per day! And here on the seaway, with average 4,000-foot one-way hauls, PAYHAULER units high speed, next-to-automatic Torqmatic brake control, and minute-saving, easy-to-heap big capacity are cutting cycle time to a minimum—and delivering maximum loads.

Success on the seaway and on other tough jobs is proving International PAYHAULER units are what rock men need...big-capacity, high-speed haulers with low downtime and operating costs. Try one soon. See your International Construction Equipment Distributor!

TON-SIZED ROCKS go up . . . then down into fill in 12 seconds. Two-stage hydraulic hoist provides full-time power control. Hydraulic snubbing assures over-center dumping, gentles body return.

INTERNATIONAL®
CONSTRUCTION EQUIPMENT

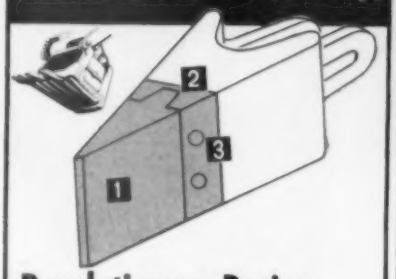
International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

NEW!

Bulldog Replaceable Digger Teeth

CUT INVENTORY AND REPLACEMENT TOOTH COSTS UP TO 65%



Revolutionary Design Has Just 3 Parts

1. *Universal Weld-On Adapter* uses old tooth as a base. Saves the cost of conventional adapter or new tooth. Same adapter fits on several different types of equipment. Easily welded on worn teeth.

2. *Positive Lock Pins* that give a tight fit to the replaceable tooth and are easily removed for replacement.

3. *Easy Change Replaceable Tooth**, changed with a hammer and punch. Has reversible bevel point. Made of highest quality alloy steel—heat treated to outwear all other teeth. Field tested in taconite mines under toughest abrasive conditions, Bulldog Teeth have consistently shown cost savings up to 65%.

YOU NEED ONLY A FEW ADAPTER SIZES TO FIT ALL POPULAR MAKES OF

Shovel Dippers — Dragline Buckets
Back Hoe Buckets — Clamshell Buckets
Loader Buckets

For descriptive folder, technical data, prices, and name of your nearest dealer—

**pat. pending* *Write Dept. PT-1*

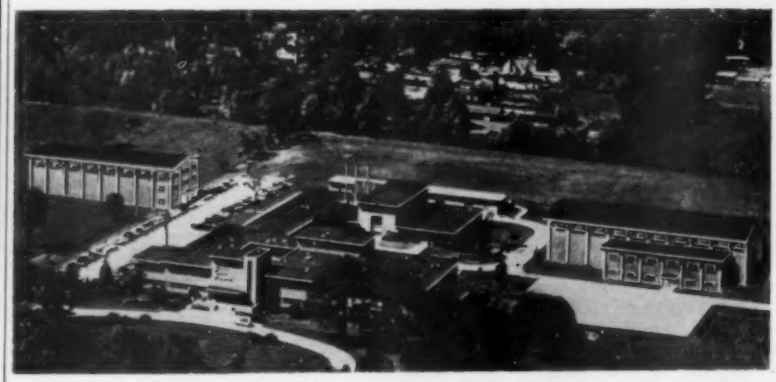
Sales Representative and Distributor Inquiries Invited

ALLIED

STEEL & TRACTOR PRODUCTS, INC.

7835 Broadway Cleveland 5, O.

Portland Cement Association To Add Two Laboratory Units



An artist's sketch superimposed on an aerial view of The Portland Cement Association Research and Development Laboratories shows the location of two new buildings planned for completion late in 1957. At the right is the fire research center, and at left the structural development laboratory. The site is in Skokie, Ill., near Chicago.

The Portland Cement Association has announced plans for the construction of two new buildings at its Research and Development Laboratories in Skokie, Ill.

The two structures, which will cost about $2,750,000, are scheduled for completion late in 1957. They will provide for the association's expanded research and development program on concrete structures and the fire resistance of concrete.

According to G. Donald Kennedy, president of P.C.A., these additions to the present $3,500,000 facilities at Skokie, will give the association the largest and most completely equipped cement and concrete laboratories in the world.

The new buildings will include a structural development laboratory and a fire research center. Each building will have as its main portion a single large room 40 ft. high, constructed of identical precast concrete structural members. Building frames will be of conventional reinforced concrete, but the beams will utilize high-strength steel reinforcing bars. Wall panels will be of "tilt-up" construction, with decorative designs cast in the concrete, and roofs of precast concrete units. Offices are to be located in an end bay of the structural development laboratory and in the wing of the fire research center.

Situated on a 31½-acre plot in Skokie, the original laboratory buildings of the association were opened in June, 1950. These facilities consist of a main laboratories structure and an auxiliary building. A pavement testing laboratory and a storage building were added in 1952.

The fire research center will be located east of the present buildings, and the structural development laboratory west of them.

Dr. A. Allan Bates, vice-president for research and development, stated that the buildings have been made necessary by significant advances in concrete technology and structural design. Dr. Bates described the structural development laboratory as in effect a "giant testing machine." Conventional testing machines will not be used. Equipment will be constructed as required from large elements of structural steel or precast concrete with hydraulic jacks to apply the test loads.

The fire research center will contain several furnaces large enough to accommodate full-scale beams, columns, walls, and floor slabs. In addition to establishing fire-resistance ratings, the fire research center staff will conduct research investigations aimed at improving the fire resistance of concrete and concrete building elements.

The fire research center will be organized under the P.C.A. Research Department, which is headed by Hubert Woods, director. The structural development laboratory is to function under the Development Department, with Douglas McHenry as director.

P.C.A. has awarded the construction contract for the proposed units to the George A. Fuller Company of Chicago.

The United States Borax Corporation plans to construct a $1,000,000 research center at Anaheim, Calif. Completion of the center is scheduled for March, 1957.

WHY

Kensington Tracks

LAST SO LONG

There are two reasons why KENSINGTON tracks give longer service, even under the severest working conditions.

First, vastly improved design.

Second, they are made from a superior, wear-resisting alloyed manganese steel.

New design. KENSINGTON tracks have only three parts . . . the rail, the grouser, and the pin. Rails are cast in *one piece* to add strength and prevent wear caused by the constant twisting and weaving found in ordinary tracks.

Grousers have anti-shear lugs which fit snugly over the tie bar of the link to eliminate loose plates, elongated bolt holes, and side-sway. Grousers are heavied-up at all critical points to better resist bending and breaking.

Pins, constructed of a special alloy, are pressed tightly in place under high pressure to give further rigidity and near-perfect alignment.

Yet, even with all these design improvements, KENSINGTON track assemblies fit all standard, popular make crawler tractors.

Steel with stamina. Development of several remarkable wear-resisting alloyed manganese steels, including ORO Supermang and Kenkrome, has also increased the wear-ability of KENSINGTON tracks. These already-hard metals *actually fight back against wear!* They develop *extra* surface hardness when exposed to friction, abrasion, or impact. Yet, under this ever-hardening "skin," these metals stay tough and strong. That's why KENSINGTON uses Kenkrome in its rails and Supermang in its grousers.

Economical, too. Though KENSINGTON tracks cost slightly more than those supplied by the tractor manufacturer, they enable you to make substantial savings.

They give you many more hours of service per dollar of cost, less time lost for maintenance, and increased operating efficiency because KENSINGTON tracks keep their "pull-bracing grouser area" for a longer period of time. Also, you can maintain a smaller inventory of repair parts.

Discover for yourself how many hundred dollars these tracks will save you over the next few years.

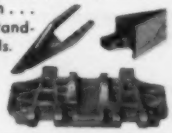
Mail the coupon for further details on how much KENSINGTON tracks will save you in the "long pull."

Other wear-resisting KENSINGTON replacement parts

FOR TRACTORS
Kenkrome replacement rims for worn sprockets. Ready to weld on.

CRUSHER PARTS
Jaw plates, roll shells, mantles and bowl liners, hammers, grate bars and liners, etc.

FOR SHOVELS
Treads, rollers, racks, pinions and teeth . . . to fit all standard shovels.



CHAIN AND SPROCKETS
150 standard chains listed in new KENSINGTON Catalog plus many special chains. All of wear-defying Kenkrome.

SUPERMANG ORO

Kensington STEEL COMPANY

KENSINGTON STEEL CO., Dept. P, 505 Kensington Ave., Chicago 28, Ill.
SUBSIDIARY OF POOR & CO., CHICAGO

Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of Tractor_____

Model_____ NO. TRACKS PER BELT_____ WIDTH OF GROUSER_____

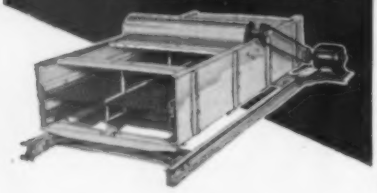
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

UNIVERSAL
OFFERS THE BEST
IN VIBRATING SCREENS
AT THE LOWEST PRICE



Before you buy, be sure to get a copy of the new UNIVERSAL Catalog #1501

There's a model to fit your particular requirement, priced within the smallest budget.

Write today for free catalog #1501

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

insist on
WIRECO
safety splice*
SLINGS

for safety
The Wireco Safety Splice is strong and smooth without hazards such as protruding strand ends, swaged collars or servings.

for efficiency
Handlers do more work in less time with greater safety.

*Smooth-Splice Miracle-Lock Safety Sling

WIRE ROPE CORPORATION OF AMERICA
St. Joseph, Missouri

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

During 1956 the higher courts in different localities rendered many outstanding decisions which clearly indicate that manufacturers, processors, buyers, and sellers of nonmetallic products who win law suits must prepare to convince a jury that the testimony in their favor is dependable and truthful.

Damages vs. Injunction

A legal question asked by a reader several months ago runs as follows: "Can several owners of dwellings file a suit and in this single suit recover damages against several quarry owners and also have an injunction to prohibit the several quarry owners from continuing their present operations?" A higher court decision recently answered this question in the negative.

For illustration, in *Dorsey v. S. Lime and Stone Company,* 133 N. E. (2d) 730, it was shown that 55 owners of dwellings filed suit against the S. Lime and Stone Company and three other operators of stone quarries and asked the court to award damages and enjoin excessives and unreasonable use of explosives constituting a nuisance.

The higher court held that an injunction could be issued against the four operators to prohibit further nuisance operations, but that it could not award damages. This court said:

"There is inherent in this situation the difficulty of equating the blasts of any one or more of the defendants (quarry owners) with the damage to any one or more individual property owners. Moreover, since the acts of each of the defendants are conceded to have been separate and independent and without any connection with the acts of the others, they cannot be made joint because of the consequences which followed in connection with other similar quarry operations."

Must Give Reasonable Notice

A reader asked this question: "If a supplier and a contractor make a contract by which the supplier agrees to furnish the contractor with materials needed to complete the contractor's job, can the contractor get damages from the supplier if the latter fails to furnish the needed materials?"

A higher court rendered a decision which answered this question, as follows: The contractor cannot recover damages from the supplier if the testimony proves that the contractor failed to notify the supplier reasonably of his requirements.

For example, in *Hulme v. Sweetman Construction Company,* 220 Fed. Rep. (2d) 66, a contractor named Hulme required a quantity of crushed rock materials, consisting of surface gravel, sub-ballast, and ballast. He needed this material in order to fulfill the terms of a contract made with a railway company's construction job.

Hulme and the Sweetman Construction Company entered into a written contract, which provided that Sweetman would stockpile for Hulme, at a designated location, approximately 1,560 cu. yd. of surface gravel, approximately 2,280 cu. yd. of sub-ballast, and approximately 5,000 cu. yd. of ballast. Hulme agreed to pay Sweetman for these materials the sum of $1.75 per cu. yd., 30 days after creation of the stockpile or withdrawal of materials. Sweetman completed the stockpiling of the amounts of materials specifically stipulated in the contract about January 1. A few weeks later Sweetman moved his crusher and other equipment to another project approximately 125 miles distant from the stockpile. By September 3, Hulme had withdrawn all of the original materials stockpiled for him in the amounts specifically set out in his contract. Hulme demanded that the Sweetman Construction Company immediately prepare to furnish additional materials. This the Sweetman Construction Company failed to do.

In subsequent litigation the higher court held that the Hulme's demand that Sweetman immediately stockpile the additional materials was unreasonable; that Sweetman had not breached its contract and that he was entitled to recover the balance due for materials furnished. The court said:

60 YEARS OF SPECIALIZATION MAKES

Moline *chain*

best by any job test

MOLINE makes just one thing—the world's finest malleable chain. The superiority of this chain has been established by 60 years of specialization. Moline engineers and technicians confine their efforts to improving design and refining manufacturing techniques—to produce chain that will give maximum efficiency . . . trouble-free performance . . . long life. And only Moline chain is triple-tested. That means Moline chains undergo rigid physical testing, visual inspection and gauging by experts. Then, after assembly, they are stressed to proof strength and shock tested for soundness. Be sure to *specify Moline Chain*, malleable or promal, for conveying, elevating and power transmission services. Write today for catalog.

Nearly a mile of Armco Special Analysis Steel Pipe carries abrasive phosphate slurry to the processing plant at the Polk County, Florida, location of the Davison Chemical Company, Division of W. R. Grace & Company.

Save on Hydraulic Materials-Handling Costs
with Durable Armco Pipe

In dredging, phosphate mining, and similar hydraulic mining operations, pipe replacement takes a big share of the operating budget. Here's why Armco *Special Analysis* Steel Pipe can help reduce this expense.

Armco Pipe provides excellent abrasion resistance and high structural strength. This means long service life . . . lower cost per cubic yard of material handled.

You can easily meet your requirements from the wide range of diameters (6 to 36 inches) and wall thicknesses ($\frac{9}{64}$- to $\frac{1}{2}$-inch) available in Armco Pipe. Ends are machine contracted or expanded on shore pipe for efficient, non-leaking joints. The interior is smooth—free from laps and weld protrusions—for high flow capacity.

Write us for information applied to your specific needs. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 3287 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Armco Special Analysis Steel Pipe

ARMCO®

It will pay you to **LEAP**

into this profitable new business...

"LIGHTWEIGHT AGGREGATE"

...but LOOK first

HERE'S WHAT YOU SHOULD KNOW!

There are hundreds of different types of clays and shales—all with different bloating characteristics.

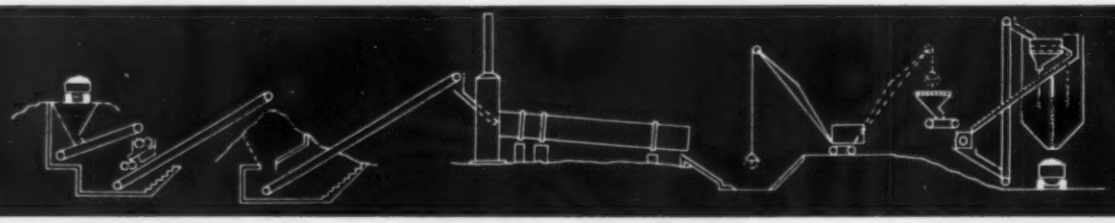
The selection of the process for preparing lightweight aggregate of the proper characteristics and size is determined by the raw material and must be made with care. McNally Pittsburg researchers, designers, and engineers have conducted a careful study of the best processing methods, and the design and construction of plants and equipment for the profitable manufacture and processing of lightweight aggregates in all parts of the country.

Last year there wasn't enough lightweight aggregate to "go around."

America's greatest Building Boom is just getting under way—and no end in sight for at least 10 years.

Builders and architects are fast turning to concrete and blocks made with lightweight aggregate!

That's why the wise operators are saying, "Let's get into a new business, 'LIGHTWEIGHT AGGREGATE.'"



"Ask the men who know"

McNALLY PITTSBURG MANUFACTURING CORPORATION

DESIGNERS AND BUILDERS OF EQUIPMENT FOR BASIC INDUSTRY

COMPLETE PLANTS OR SINGLE MACHINES

Clay Disintegrators
Clinker Breakers
Conveyors • Coolers • Hoists
Jaw Crushers • Kilns
Roll Crushers • Vibrators
Apron and Reciprocating Feeders
Materials Handling Equipment

GET THIS FREE BROCHURE AND SPECIAL INFORMATION

McNally Pittsburg Mfg. Corp., Dept. P
Pittsburg, Kansas

Gentlemen:

Please send brochure on Lightweight Aggregate plants. ☐

Desired capacity of plant per day is _____.

Shale ☐ Clay ☐

Name_____ Title_____

Company_____

City and State_____

Adolph E. Bertoia

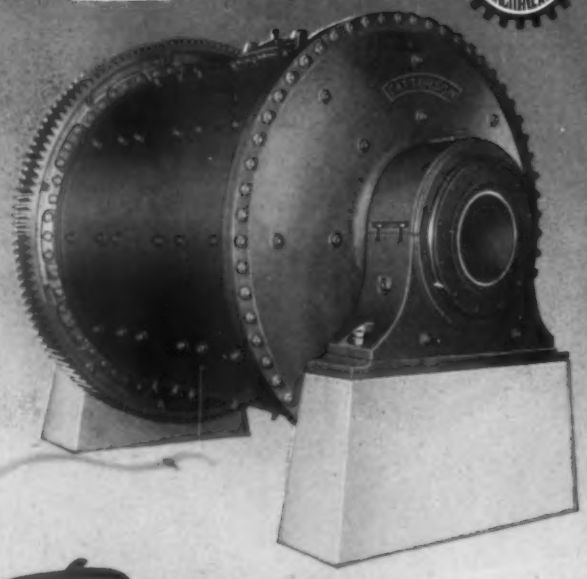
VIBRATING EQUIPMENT · CONVEYOR BELTING AND MACHINERY · INDUSTRIAL HOSE · DESIGN ENGINEERING,

STACKS UP IN A HURRICANE

Even a hurricane can't damage this giant traveling stacker with its 235-foot cable-suspended belt conveyor boom. It was designed and constructed by Hewitt-Robins for Coronet Phosphate Company, Division of Smith Douglass Company, Inc., in Florida to withstand more than maximum hurricane velocity winds. This rugged unit which handles phosphate at 300 tons per hour is another example of Hewitt-Robins' ability to solve unusual bulk materials handling problems for industry. To obtain complete information about Hewitt-Robins products and services, see your classified telephone directory or write directly to our office in Stamford, Connecticut.

HEWITT-ROBINS

MANUFACTURE AND ERECTION OF BULK MATERIALS HANDLING SYSTEMS • JONES POWER TRANSMISSION EQUIPMENT

HEAVY-DUTY GRINDING
from
Alumina
to
Zircon
PATTERSON MACHINERY

Patterson
BALL & TUBE MILLS

BUILT TO WITHSTAND THE MOST SEVERE PUNISHMENT IN SERVICE—Readily adaptable to fine or coarse grinding, wet or dry grinding, open or closed circuit grinding. Used successfully by the metal mining industry throughout the world.
Do you have a copy of our Catalog 5347
The Patterson Foundry and Machine Company
A Subsidiary of Ferro Corporation
East Liverpool, Ohio, U. S. A.
The Patterson Foundry and Machine Company (Canada) Limited
Toronto, Canada

"It was incumbent upon Hulme to give Sweetman Construction Company reasonable notice that he would require additional materials."

Freezing is Contractor's Loss

An executive of a large construction company asked this question: "If concrete poured one day freezes that night, due to an unexpected drop in the temperature, who is liable for payment of the cost of repairing or repouring the concrete?"

Last month a higher court answered this question.

In Thompson Construction Company v. Schroyer, 298 Pac. (2d) 239, the testimony showed that a contractor laid a 6-in. thick driveway. That night an unexpected freeze ruined the driveway.

In subsequent litigation the higher court held that since the contract contained no clause which relieved the contractor, the latter is liable for the payment to the property owner for the reasonable and necessary expense of removing and repouring the frozen concrete driveway. This court said:

"Schroyer (property owner) is entitled to have what he contracted to receive, or to have deducted from that which he owes appellant (contractor) an amount reasonably necessary to provide him with a proper and suitable concrete driveway."

See also *Kanzius v. Jenkins,* 157 P. 417. In this case a construction company agreed to construct a bridge with a concrete floor. It laid the concrete in the latter part of March in the presence and with the consent of an inspector employed by the county commissioners. The following night there was a sudden change of temperature which resulted in freezing and disintegrating the concrete, so that the floor had to be relaid. No provision was made in the contract to relieve the contractor from the effects of frost, storms, or like casualty. Hence, the court held that the loss caused by the freezing of the concrete falls upon the contractor.

Therefore, it is quite apparent that contractors who desire to avoid liability for damage to their work caused by freezing, storm, fire, and the like, must include these exceptions in the contract originally made with the property owner.

Mortgage Without Consideration

Considerable discussion has arisen from time to time over the legal question: Is a chattel mortgage valid when taken on equipment previously sold under a conditional contract of sale?

A higher court held that unless the holder of the conditional contract of sale assigns his interest in the contract, a chattel mortgage given on the same equipment is void.

For example, in *Fine v. Eubanks,* 292 Pac. (2d) 538, these facts were brought out: A purchaser named Eubanks agreed in a written conditional contract of sale to purchase from a seller named Fine certain quarry machinery for the sum of $8,683.54, payable in specified monthly payments. This contract of sale was a conditional contract with title reserved to Fine until the purchase price had been paid. The purchaser, Eubanks, failed to make the agreed payments, but while in possession of the machinery became indebted to one Koss for wages and money advanced. In order to pay Koss, Eubanks mortgaged the machinery and equipment to Koss. Later Koss foreclosed the mortgage, and the equipment was sold at public auction to one Bailey for cash.

In later litigation, the higher court held that the mortgage and foreclosure was invalid and that Bailey had no interest or other rights in the machinery. This court said:

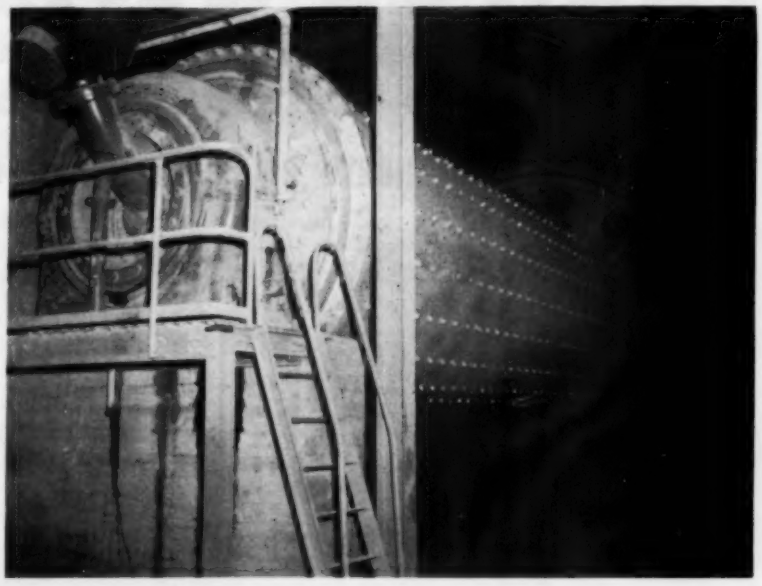
"Assuming that at the foreclosure sale he (Koss) obtained the rights of Eubanks that would not necessarily obligate him to perform Eubanks' obligations and especially to pay the purchase price, Fine could not compel appellant (Bailey) to pay the purchase money. Consequently, appellant (Bailey) got nothing by bidding at the purported sale."

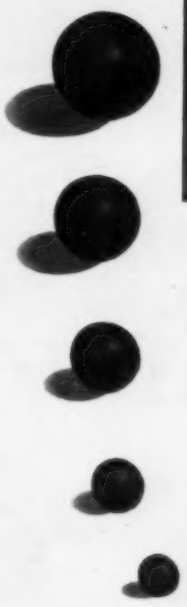
Independent Contractor

A concrete contractor asked this legal question: "How can I know for certain when an employee is injured, whether he is an independent contractor or merely an employee?"

Obviously, the answer to this legal question is important to all readers for many reasons; among them is the fact that an injured independent contractor may sue and recover damages directly from the contractor, whereas a legal employee must accept compensation payable from the state-controlled funds under the State Workmen's Compensation Act.

The higher courts consistently hold that the primary and important test in determining this question is whether the employer has the right of control over the employee. Generally speaking, if the employer has a right of control, the employee is a legal employee. On the other





GRINDING BALL WEAR RESISTANCE INCREASED 400%

Recent tests in several cement plants have shown that in dry grinding, Calumet Ni-Hard* grinding balls provide a 400% increase in resistance to wear when compared to forged steel balls used in an identical operation. If you operate cement clinker grinders these same impressive savings can be yours.

And in wet grinding of copper ore, the same Ni-Hard balls indicate a 40% reduction in grinding balls costs per ton of ore ground!

All Calumet Ni-Hard grinding balls are the result of thorough testing and careful quality control. Balls are available from stock in the following sizes: 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2" and 2". More information is available without obligation—just write!

**Reg. U.S. Pat. Off., Intl. Nickel Co., Inc.*

CALUMET & HECLA, INC.
CALUMET DIVISION
WOLVERINE TUBE DIVISION
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER COMPANY
CALUMET & HECLA OF CANADA LIMITED
CANADA VULCANIZER AND EQUIPMENT COMPANY LIMITED

CALUMET DIVISION

of Calumet & Hecla, Inc.

1 CALUMET AVENUE • CALUMET, MICHIGAN

LOOK TO DAYBROOK

. . . For a New Standard of Performance on "Rock Routine"!

Illustrated—Daybrook Series 1050
Rock Bodies—Boulder Dam Type

Daybrook Rock Bodies and Hoists, long known for rugged dependability, now set a *new standard* of performance in quarry operations.

Improved Construction . . . Better Materials . . . Superior Workmanship—assure longer, profitable life on the "Rock Routine."

Daybrook builds a *complete* line of Rock Bodies and Hoists for *all* quarry and mine applications. In addition, Daybrook is the first to offer sealed hydraulic cylinder design—backed by a *one-year warranty*.

SEND DAYBROOK LITERATURE CHECKED BELOW:

☐ ROCK BODIES—HOISTS ☐ POWER LOADER ☐ EXCAVATOR BODIES—HOISTS ☐ POWER GATE

Sign below, attach coupon to letterhead, and mail in envelope.

Name

DAYBROOK *Speedlift*® **TRUCK EQUIPMENT**

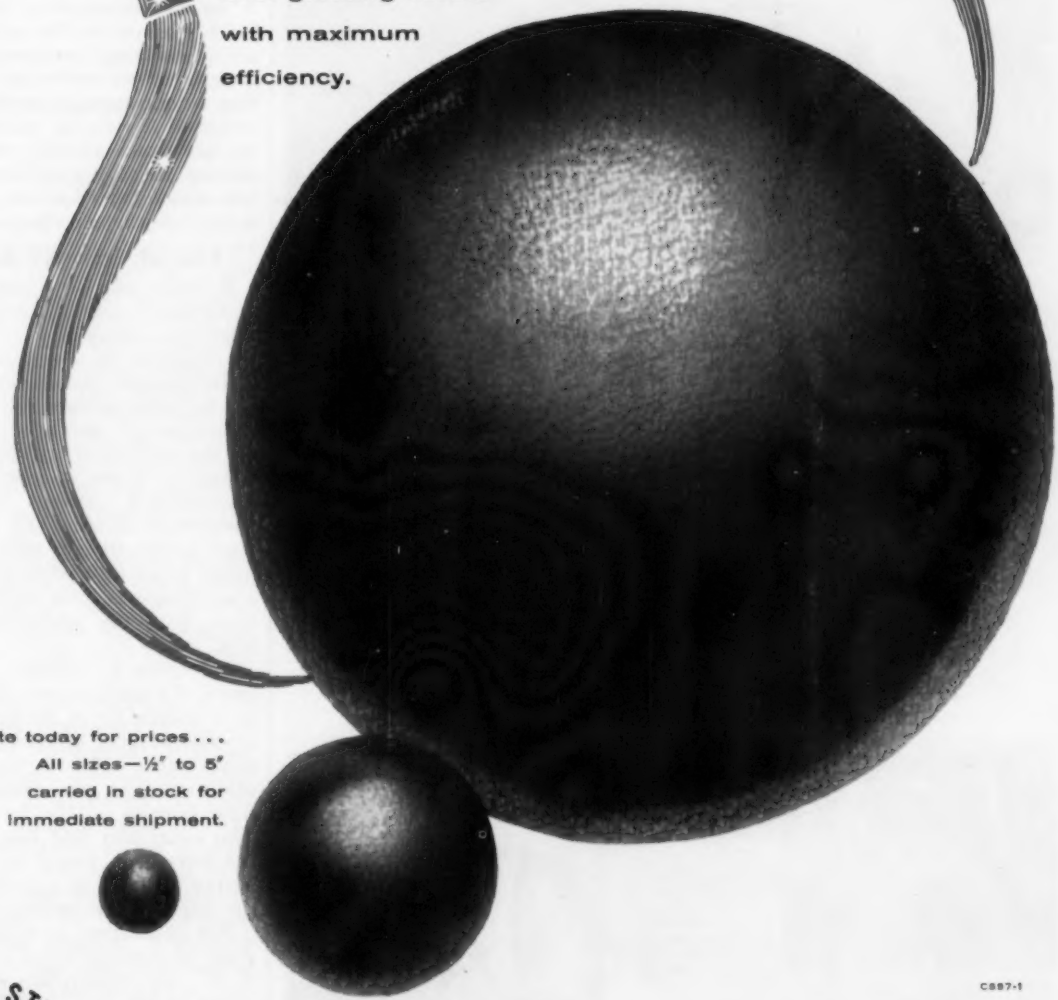
LAYCO

DAYBROOK HYDRAULIC DIVISION
L. A. YOUNG SPRING & WIRE CORPORATION
BOWLING GREEN, OHIO

Carbex

TRIPLE-FORGED, STEEL GRINDING BALLS . . .

Are round . . . and stay round all through the grinding process to assure uniform wear . . . Here is low cost grinding media with maximum efficiency.



Write today for prices . . .
All sizes—½" to 5"
carried in stock for
immediate shipment.

C887-1

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

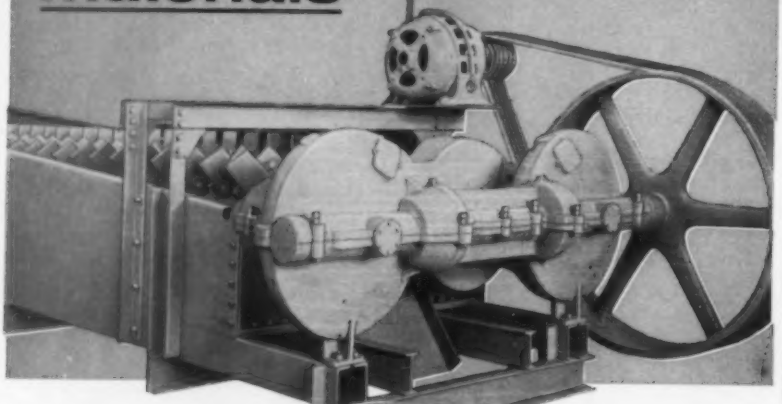
COATES STEEL PRODUCTS CO.

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

High Capacities of clean materials

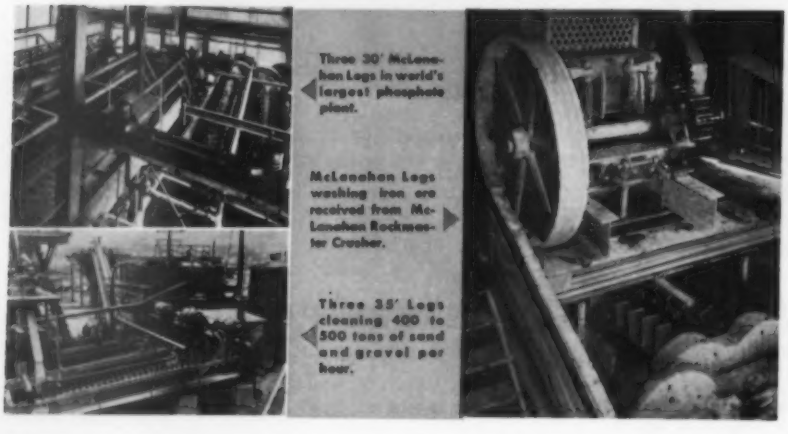
Developed from the world's first all-steel log washers built by McLanahan & Stone in 1894, these machines produce high tonnages of exceptionally clean materials—removing tough clay, soft rock and refuse with unequalled speed and economy. Available in Heavy-Duty and Mudmaster styles. *Write for Bulletins WLO-1155 and MM-755.*



McLANAHAN SINCE 1835

LOG WASHERS

McLANAHAN & STONE CORPORATION
253 Wall Street, Hollidaysburg, Pennsylvania


Three 30' McLanahan Logs in world's largest phosphate plant.
McLanahan Logs washing iron ore received from McLanahan Rockmaster Crusher.
Three 35' Logs cleaning 400 to 500 tons of sand and gravel per hour.

hand, the general rule is that a professional man such as an architect or supervising engineer is an independent contractor. A court upheld this latter rule of law, although the professional employee was under control of the employer.

For illustration, in *Independent v. Latham,* 282 S.W. (2d) 846, the testimony showed that a man named Latham was employed by the Independent Company to draw plans for a new warehouse to replace one which had been destroyed by fire.

Notwithstanding that the testimony showed that Latham was subject to the company's orders and under its control and instructions, the higher court held that Latham was an independent contractor, and said:

"In the present case Latham was hired because of his professional skill. Generally, any specialized or professional services rendered other than by one engaged for fixed hours at a fixed recompense are not within the compensation act. After considering all the applicable factors, it is obvious that Latham was hired as an independent contractor."

Law of Exclusive Agency

A reader asked this question: "If a wholesale dealer spends much money to introduce a manufacturer's products in a certain territory under an exclusive agency contract, can the manufacturer cancel the exclusive agency contract without paying the wholesaler any money? Also, I want to know whether or not a manufacturer transacts intrastate business in a state and must pay taxes to this foreign state if it furnishes its agent a stock of goods in a warehouse to draw from, and the agent pays the warehouse storage bills."

According to a higher court decision, if a manufacturer stores goods in a warehouse in its agent's state for safe keeping of merchandise on consignment with its agent, the manufacturer does not transact intrastate business in the foreign state. This court also held that the manufacturer may cancel an exclusive agency contract in accordance with the terms of the agency contract.

For illustration, in *Superior Concrete Accessories v. Kemper,* 284 S. W. (2d) 482, it was shown that a law of the State of Missouri provides that a foreign corporation cannot lawfully "transact business" in the state unless it procures from the Secretary of State of Missouri a "certificate" of authority to do so.

The Kemper Company, a corpo-

ration in Missouri, signed a distributor's "exclusive" sales contract with Superior Concrete Accessories, a manufacturer, whose plant and offices are located in Chicago, Ill. This contract contained a clause to the effect that the agreement was for an indefinite period of time and could be terminated by either party "at any future time."

Pursuant to the sales agreement, the Kemper Company took orders from purchasers in Oklahoma, Kansas, and Western Missouri and sent the orders to the Superior Concrete Accessories office in Chicago. Generally speaking, the latter filled these orders by shipping the merchandise directly to the purchasers. The manufacturer billed the purchasers and was responsible for making the collections. Also, the Kemper Company maintained at its sole expense a warehouse in Missouri for storing consigned stock which was shipped by the manufacturer to the Kemper Company f.o.b. Chicago.

Controversy developed between the manufacturer and officials of the Kemper Company. The manufacturer filed suit and asked the court to cancel immediately the exclusive sales agency with the Kemper Company. The legal counsel for the latter contended that the manufacturer could not maintain the suit because the above mentioned Missouri state law prohibited a foreign corporation which "does business" in the state without a certificate of authority to file such a suit. In other words, the Kemper Company's lawyer contended that Superior Concrete Accessories transacted intrastate business.

The higher court decided that the manufacturer was not doing intrastate business in the state of Missouri and therefore could prosecute and maintain the suit. The higher court said:

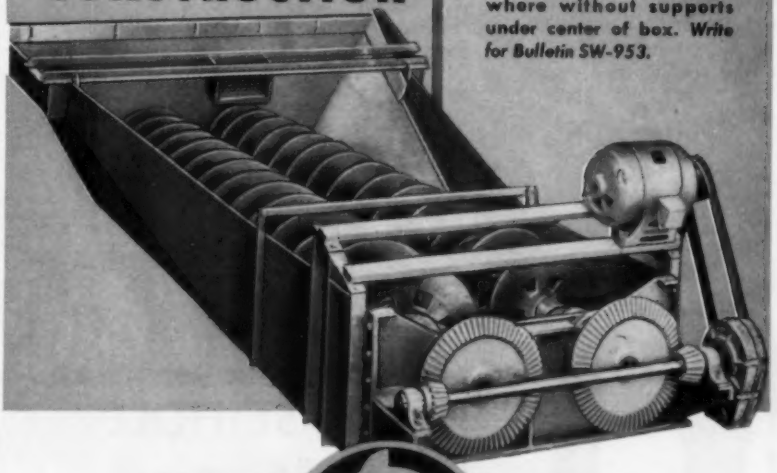
"Under the circumstances of this case the acts of respondent (Superior Concrete Accessories) in selling its products at a discount and shipping them to appellant (Kemper Company) who in turn sold the products at a profit to the ultimate user did not constitute doing business in this state by respondent."

The court went on to explain that Superior Concrete Accessories shipped the consigned merchandise to the Kemper Company f.o.b. Chicago, and the Kemper Company itself warehoused the merchandise in a warehouse maintained solely at its expense, and employed its own salesmen to sell the products. Since Superior Concrete Accessories did not

Drier, Cleaner Finished Product

. . . HEAVIER CONSTRUCTION

Heavier constructed throughout, these units are designed to exceed the service life of competitive washers, while assuring low-cost removal of waste and water. Among significant design features are: (1) grease-lubricated, anti-friction bearings, sealed against water and sand, (2) simplified drive, (3) sufficient rigidity to be set anywhere without supports under center of box. *Write for Bulletin SW-953.*



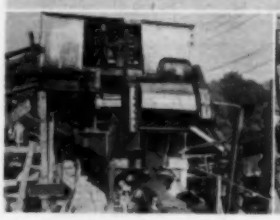
SINCE 1835 McLANAHAN

SCREW WASHERS

McLANAHAN & STONE CORPORATION

253 Wall Street, Hollidaysburg, Pennsylvania

McLanahan Single Screw Washer.



(For left) Single Screw Washer dewatering concrete sand.

Cleaning and classifying coarse and fine sands with McLanahan Screw Washers.

maintain a warehouse in Missouri and had no employees in the state, it did not transact intrastate business in Missouri.

Also, the higher court held that the manufacturer had a legal right to cancel the distributor's sales agreement, and said:

"The agreement is of the type in common use in modern industry for the distribution of manufacturer's product. The duration of the contract is not fixed expressly or by implication. Its expiration does not depend upon the completion of a given undertaking, or upon the happening of some event. There is no fixed period for its termination, and the period therefore is indefinite."

This court explained that in an exclusive agency or distributor's sales contract the buyer or agent is expected to do more than merely render service in the sale of the manufacturer's product or to pay the stipulated price therefor. On the other hand, other higher courts recognize the fact that although an exclusive agency contract does not contain a clause whereby the seller will pay the agent something for his efforts and expenses of building up the manufacturer's business, it is expected that the agent will make an investment for the purpose of selling the manufacturer's product. Moreover, it may also be said that the manufacturer does more than merely sell his product to the agent; he entrusts the fate of his product in the territory given exclusively to the agent. This higher court held that while there is a marked distinction between the two types of contracts, for the purpose of determining the duration of the relation between the parties and the power to terminate it, they are essentially the same.

Further testimony in the above case showed that at the time the manufacturer cancelled the agent's agreement the contract had been in effect more than 12 years, and that the Kemper Company earned $93,637.78 in commissions in the previous 4½ years. In view of these facts the higher court refused to hold the manufacturer liable to the Kemper Company for any money payment or damages for cancelling the distributor's sales contract, and said:

". . . This agreement had been in effect for more than 12 years at the time of the trial of this case, and we are of the opinion that the trial court correctly found that Kemper Company has had a reasonable and ample opportunity to recover the amounts invested pursuant to the agreement in the promotion of the business of respondent."

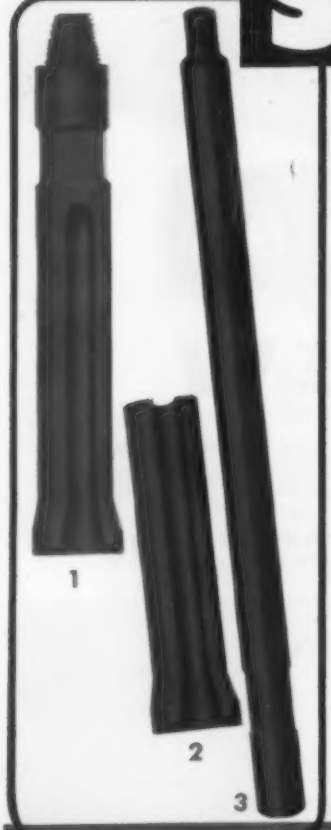
Thus, in the above case the higher court held that Superior Concrete Accessories had a legal right to cancel the distributor's or agent's sales contract, made 12 years previously, and that the Kemper Company could not recover money payment or damages from Superior Concrete Accessories. Also, the court held that Superior Concrete Accessories was not transacting intrastate business in Missouri and that, therefore, it could maintain a suit against the Kemper Company to cancel the contract without authority from the Secretary of State. This was so although the counsel for the Kemper Company contended that Superior Concrete Accessories was illegally doing business in the state of Missouri by reason of fact the credit risks on sales and shipments made out of the Kemper Company's warehouse fell on the manufacturer; that the Kemper Company had at times assisted the manufacturer in collecting accounts; and that the manufacturer had referred numerous customers to the Kemper Company and instructed prospective customers to contact the latter company.

(Continued on page 247)

Thoroughbreds
for your string!

SPANG

BLAST HOLE BITS and STEMS



Sure winners in performance and production! Spang Bits and Stems, developed by skilled experts, are a safe bet to pace the field in long service and economy. Win, place or show you can be sure with Spang.

1. **SPANG CHURN DRILL BITS** drill more holes per bit at lower cost! Fully heat-treated, high carbon, molloy steel, or 4340 steel. They have added strength in pin and blade sections to enable them to take the toughest drilling conditions in stride. Semi-dressed ends speed finish-dressing.

2. **SPANG REPLACEMENT BLADE SECTIONS** are for welding to the pin and collar sections of the original bit when it has become worn from long service.

3. **SPANG INTEGRAL ROPE SOCKET TYPE STEMS** with heat treated swivel socket and swivel. Drill more . . . drill longer for less with these rugged, efficient stems. Made from one bar of steel with only a threaded box joint with integral rope socket top the stem's uniformity cuts vibration or whipping. Tools turn freely in the open swivel socket keeping the hole round and straight.

Your inquiries are welcome— contact your nearest Spang dealer or write direct to:

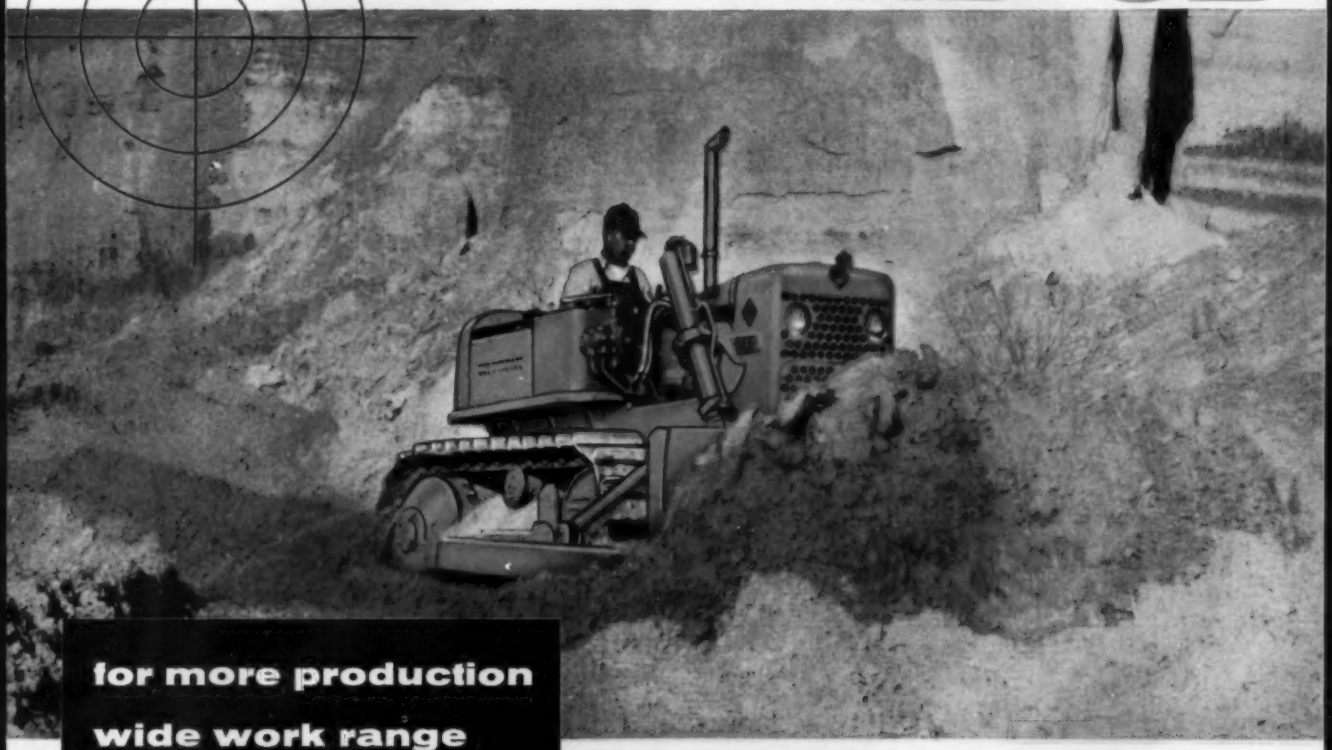
The HIGHER STANDARD

SPANG & COMPANY

DEPT. M-3 BUTLER, PENNSYLVANIA

For over 60 years Manufacturers of Spang Weldless Jars and a Complete Line of Cable System Drilling and Fishing Tools for Oil and Gas Wells, Prospect Drilling and Shot Blast Holes.

Set your sights on an HD-6B



for more production
wide work range
low job costs

52 drawbar hp — **63** belt hp — **15,540** lb (with dozer) and all these exclusive on-the-job advantages important to owners and operators.

All-steel, box-A main frame — soaks up shock loads.

One-piece steering clutch and final drive housing — line-bored for true alignment of shafts and gears.

Straddle-mounted final drives — with bearings on both sides of gears to maintain gear tooth alignment.

Heavy-duty truck frames — keep tracks in line, reduce wear . . . help get more work done at lowest possible cost.

Allis-Chalmers long-life diesel engine — with follow-through combustion that delivers power for big output with ample power reserve.

Simplified lubrication — including 1,000-hour lubrication intervals for truck wheels, idlers, and support rollers . . . provides extra working time.

Unit construction — makes service easier, faster . . . major units can be removed without disturbing adjacent assemblies.

Operator ease and comfort — with foam rubber seats . . . responsive controls . . . full visibility.

Wrap-around radiator guard— serves as dozer lift frame . . . reduces weight and cost, produces superior balance for tractor-dozer.

Engine-mounted bulldozers — direct lift . . . positive down pressure . . . hydraulic straight blade or angle blade.

Plus heavy-duty, tapered roller bearing truck wheels, heavy duty truck wheel guards, 24-volt direct electric starting, crankcase guard, bumper, and lights at no extra cost.

Check the complete service program offered by your Allis-Chalmers Construction Machinery dealer. His factory-trained servicemen, factory-approved facilities, and stocks of True Original Parts keep your equipment operating properly . . . add up to the kind of service that saves you money.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Get all the facts from your Allis-Chalmers dealer . . . now!

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

NOW—*BULL'S-EYE KILN CONTROL*

at maximum capacity

Your recorder charts will resemble bull's-eye targets when your kiln is equipped with Bailey Automatic Kiln Control. A Bailey controlled kiln literally thinks for itself . . . Reacts quickly and correctly to any changes in operating conditions. Steady-state operation at maximum kiln capacity is achieved for days at a time with little or no supervision.

A Bailey Engineer will be glad to help you plan for *bull's-eye* kiln control. Write for a ROTARY KILN CONTROL FOLDER, complete with case histories and charts. C-9

Instruments and controls for power and process

BAILEY METER COMPANY

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

BAILEY METERS

HERE'S THE EXCLUSIVE

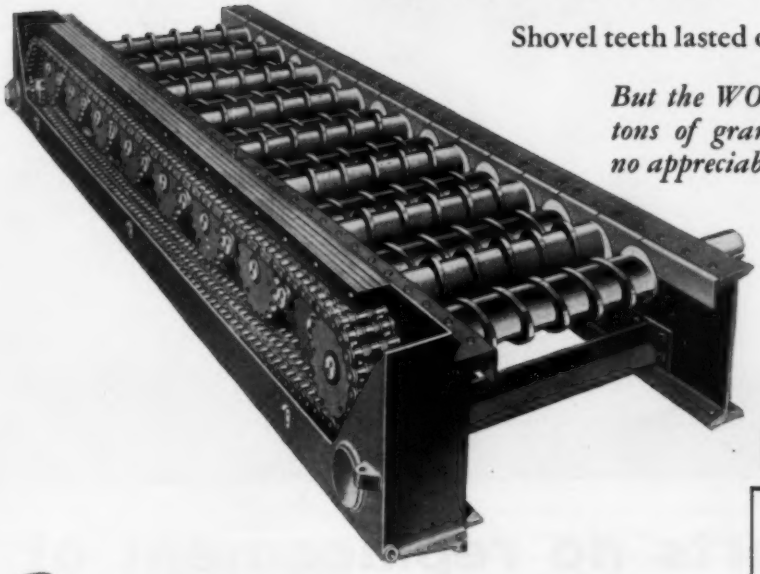
PETTIBONE UNIVERSAL WOBBLER

the most advanced idea in existence for separating fines from oversize!

Leading construction publications are currently reporting the WOBBLER as a "contract saver" on the Montgomery Dam project, Alma, Colorado.

Shovel teeth lasted only two 10-hour shifts—

But the WOBBLER handled 325,000 tons of granite in four months with no appreciable wear—no breakdowns!



ROAD SHOW FEATURE
Jan. 28 — Feb. 2

See the UNIVERSAL WOBBLER at Pettibone-Mulliken Booth No. 813 in Donovan Hall, International Amphitheatre, Chicago.

See the NEWEST PRODUCT COMBINATION FOR HANDLING AGGREGATES EVER AVAILABLE TO THE ROAD BUILDER AND CONTRACTOR — The UNIVERSAL WOBBLER, combined with a UNIVERSAL IMPACT MASTER.

The Wobbler, in this combination is now at work for Grannas Bros., Altoona, Pennsylvania.

MAKE THE
UNIVERSAL WOBBLER
a "must see" item at the Road Show and learn how you can use it to increase your primary crusher capacity from

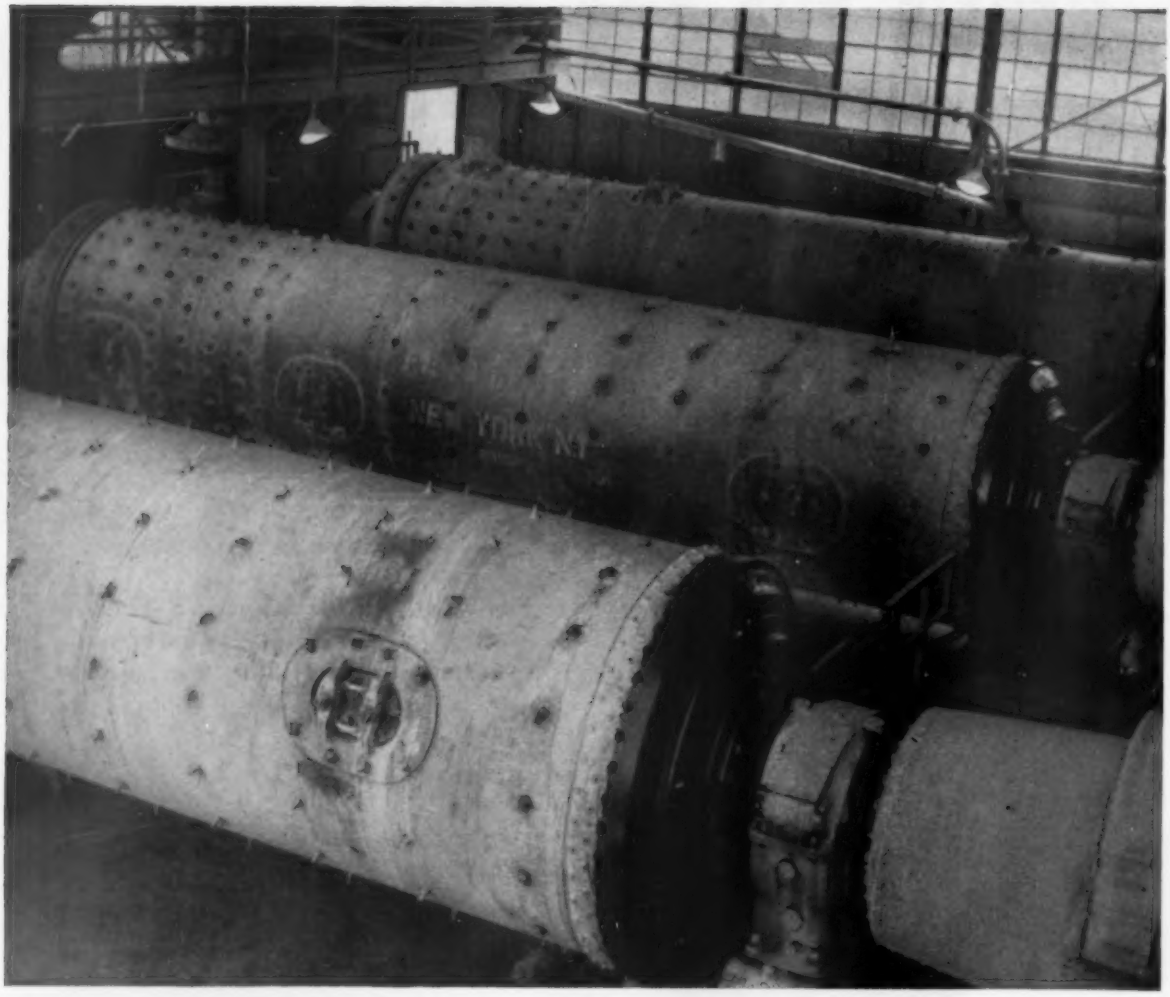
50 to 100%

Write for literature showing complete range of Wobbler Feeder sizes.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue, N.W., Cedar Rapids, Iowa
Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois



Reports no replacement of Ni-Hard liners in 3½ years

St. Mary's Cement Company, St. Mary's, Ontario, Canada installed these three grinding mills back in 1953.

They report the original Ni-Hard* liners *still* effective . . . *still* taking the abrasive battering of raw cement and grinding balls . . . *still giving satisfactory service.*

Now St. Mary's is installing a new raw grinding mill requiring a 60-ton ball charge. Naturally it will be equipped with Ni-Hard cast iron, too. A wise choice. Based on past performance and because . . .

Ni-Hard liners often double or triple the interval between relinings

Next time you line, try this nickel-chromium white cast iron. Test it under *your* terms, *your* service conditions . . . no matter how abrasive . . . how punishing they may be.

You'll find Ni-Hard liners minimize wear . . . hold contours longer . . . give longer service . . . more than pay for themselves in reduced operating expenses.

*Registered trademark

INCO TRADE MARK **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street New York 5, N. Y.

Moving fast, this 550 Adams grader keeps pit floor clean, saving wear on fleets' tires and treads. Permits driving equipment by shortest routes, improves drainage.

This high-speed modern grader keeps haul-roads in first-class condition to speed movement of production haulers, reduce wear on tires and machines.

Cut mining costs thru better clean-up

There are only two ways to increase your mining profits without a rise in the price of ore. You must increase production, or lower costs...or both.

You may think of your grader simply as a maintenance tool. But in the hands of a good operator, a versatile, modern high-speed grader increases mining production and cuts operating costs. Check these 9 big ways increased grader capacity can increase your profits.

Occasional spill over sides of heaped trucks ...around hoppers, grizzlies, conveyors, and trestles...can litter concentrating plant area, slow traffic, damage tires. This Adams grader keeps this area clean by daily clean-up.

1. ***Regular and more frequent maintenance of haul roads*** — smooth roads speed hauling, save tire-wear, cut mechanical maintenance, improve safety.

2. ***Quick clean-up after blast***—grader provides a fast, inexpensive way to move scattered fragments back against toe, thus protecting men, machinery, and tires working around pit, speeding up all pit operations.

3. ***Clean pit floors*** — regular routine of maintaining wide traffic ways that make all areas of pit quickly accessible pays off. Equipment can travel to any assignment by shortest route. Smooth access saves wear on tires and crawlers, improves drainage, prevent dirt and refuse from weathering into levels of ore below floor.

4. ***Maintain good housekeeping around plant***—you need ample grader capacity to keep roads, runways, working areas around plant neat, clean, and workable at all times. Level or remove the occasional spill left by heaped trucks...from around hoppers, grizzlies, conveyors, trestles. Clean plant area speeds all mobile equipment operation around plant, reduces dust, improves safety.

5. ***Keep stockpile toes pushed in*** — weather and loading operations result in spread of toes around stockpile. This limits working space, wastes stored material. Also, working thinly-spread toes means inferior ore grades, increases loading cost. Regular grader service helps prevent this waste.

6. ***Keep dumps smoothly spread and level*** — regular grader service can spread dumped material clear over edge. Offset blade reaches far beyond leaning front wheels which hold against side thrust. A smooth, level, dry dump speeds hauling and dumping, cuts equipment costs. Grader can smooth haul road coming and going.

7. ***Clean ore benches of washed-down dirt*** — every rain washes dirt into upper benches, lowers ore grade. Prompt grader service halts "wash", provides planned drainage, piles washed-in material for easy removal by scraper or truck.

8. ***Assist exploration teams*** — a modern grader can build a well-graded and drained roadway in a matter of hours, speeds exploration work by maintaining good haul roads.

9. ***Keeps drainage open*** — in a few hours work per week, a modern grader will keep ditches clean, pit dry.

Inventory capacity of your present graders

It will pay you to inventory the work capacity of your present graders. If they are more than a few years old, you will probably find a substantial saving in replacement with the faster, more powerful, big capacity graders currently on the market. We will be glad to assist by furnishing specifications and comparative statistics on our line of modern Adams graders.

Reprints available on request.

AG-34-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

NO REBORING–

NO KEYSEATING–

NO MACHINING–

NO WAITING!

TAPER-LOCK SPROCKETS
SINGLE AND DOUBLE STRAND!

NOW Taper-Lock *Double* Strand Sprockets are available—from stock—ready for the shaft without re-machining!

They offer all the advantages of Taper-Lock mounting. Easy on! Easy off! Precision machined at the factory, they come to you with accurate, concentric bores—insuring full contact between hub and shaft. Taper-Lock grips with the firmness of a shrunk-on fit!

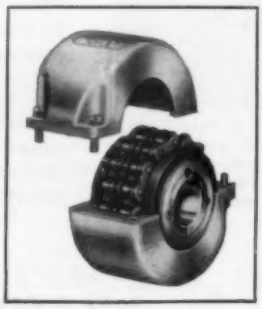
There is no flange, no collar, no protruding part. Flush design means *safety*... If the sprocket becomes worn, you replace only the tooth part. The bushing is used again and again. And Taper-Lock bushings are interchangeable in Dodge Taper-Lock Sheaves, Couplings and Conveyor Pulleys!

Taper-Lock Sprockets and Dodge Roller Chain (made to ASA standards) are stocked by Dodge distributors. Single Strand sizes range from No. 40 to No. 160, up to 112 teeth; Double Strand from No. 40-2 to 80-2, up to 102 teeth. Write for Bulletin A-644 containing selection, installation and maintenance data.

DODGE MANUFACTURING CORPORATION
4000 Union Street, Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new methods. Look for his name under "Power Transmission Machinery" in your classified phone book, or write us.



TAPER-LOCK CHAIN COUPLINGS

Accommodates common minor shaft misalignments. Provides strong, compact coupling. Available with covers, for appearance, safety, dirt protection — and lubrication, which increases coupling life.

(Illustration from Agricola's De Re Metallica (1621)

All ore processing was difficult 400 years ago

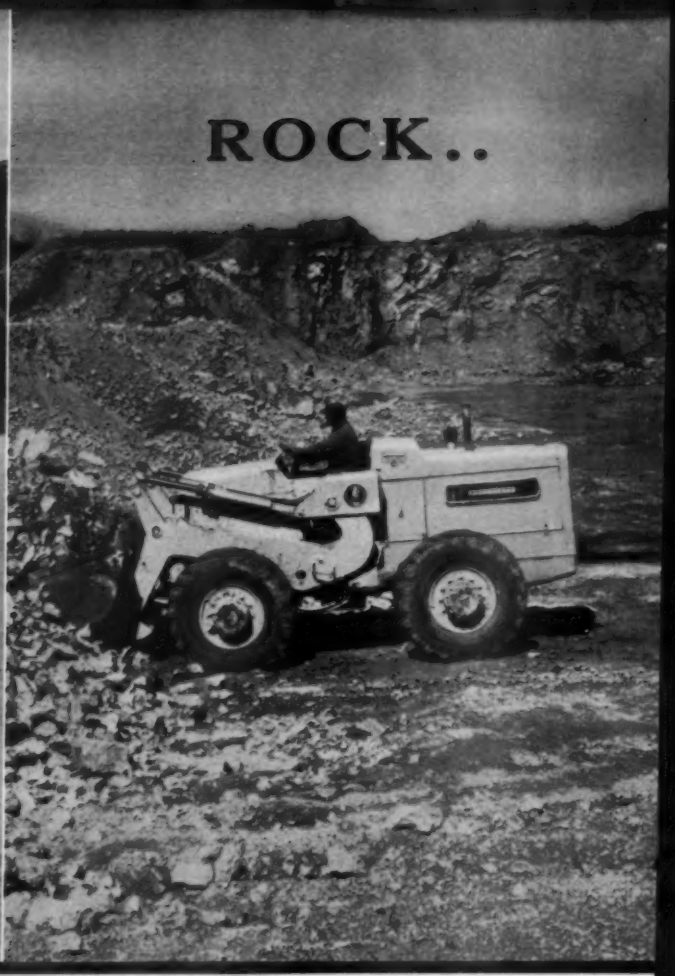
There was a time when the grinding in an ore preparation plant consisted of a man with a hammer—like the one shown here, equipped with heavy leggings and gloves to protect himself against flying ore chips.

Today's ore processing plant is a far cry from this. It utilizes efficient grinding mills that turn out many tons of processed ore every day—mills which so often use CF&I Grinding Balls and Rods. CF&I Grinding Balls and Rods are always made from special analysis steel that has the ideal balance between toughness and hardness to assure optimum grinding ability and maximum wearability.

THE COLORADO FUEL AND IRON CORPORATION

Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb)
Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio
San Francisco • Seattle • Spokane • Wichita

CF&I



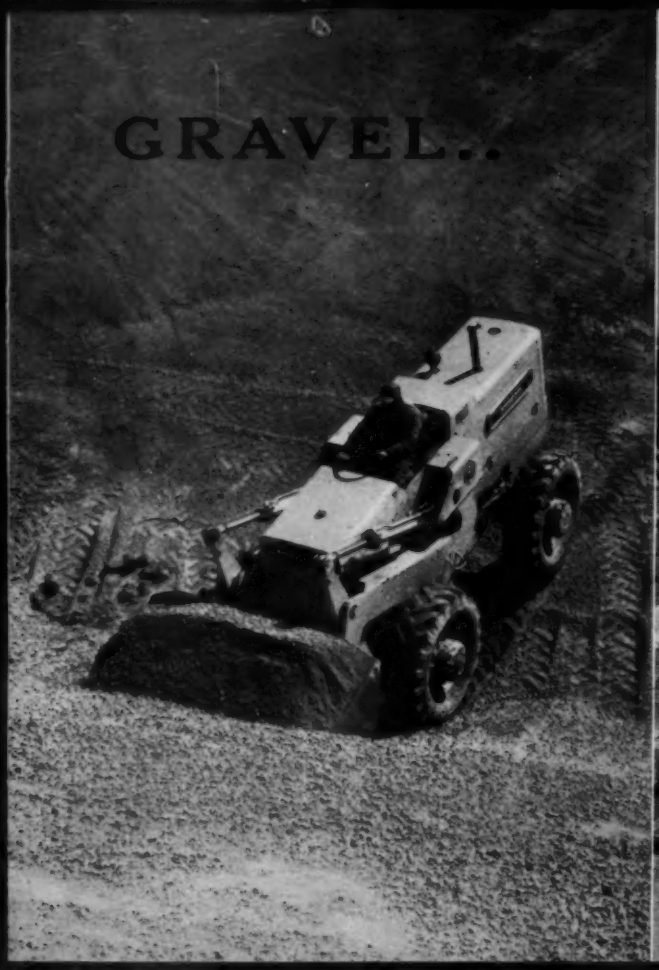
More Yardage with

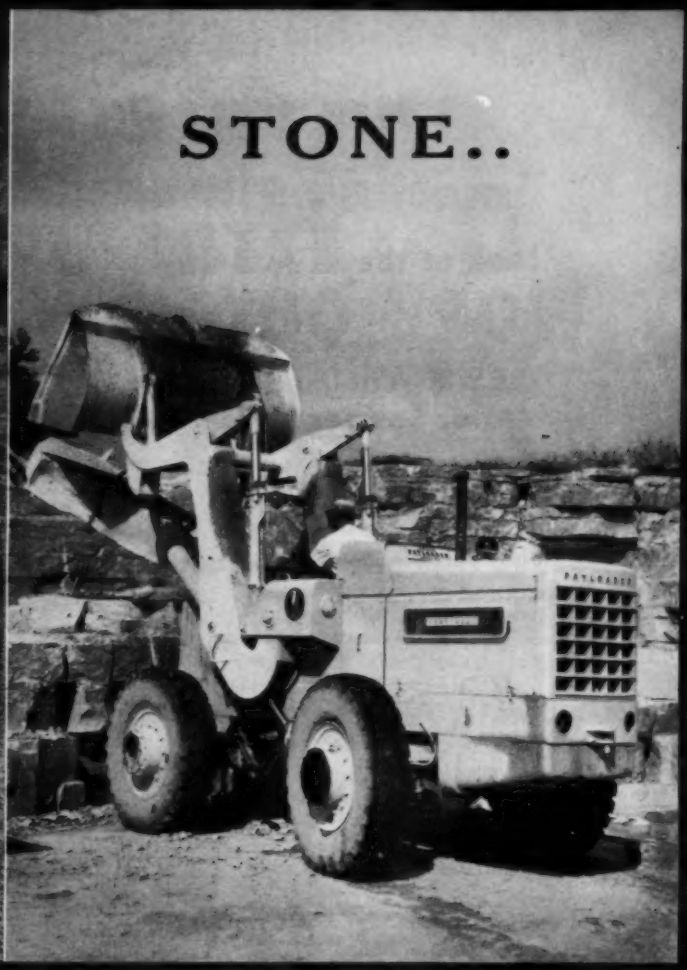
No one knows better than you that a rubber tired tractor-shovel can do so many jobs, under so many kinds of job conditions, that the yardage handled can vary considerably. That's why yardage figures can be so misleading unless all the factors are taken into consideration . . . kind of material . . . whether in-place or rehandling . . . operator efficiency . . . length of haul . . . waiting time for trucks . . . one location or scattered jobs, and many other variables that affect daily output.

But of this you can be certain . . . on any given job the new "PAYLOADER" tractor-shovels will deliver more yards per day than any comparable size tractor-shovel . . . and will do so continuously shift after shift.

The knowledge and experience gained in building thousands of tractor-shovels over the past 35 years is your assurance that a "PAYLOADER" is superior in design, engineering and performance . . . that it will outperform and outproduce any other comparable unit on any job.

So don't be deceived by "box-car" yardage figures . . . take a close look at the "PAYLOADER" . . . on your job . . . and you be the judge. Your "PAYLOADER" distributor will be happy to arrange a demonstration at your convenience.





a PAYLOADER®

Full of "More-Yardage" Features

- Exclusive power-transfer differentials
- No-stop Power-shift transmission
- Planetary final drives
- Hydraulic system load shock absorber
- Powerful 40° bucket pry-out, breakout action at ground level
- Power steering and 4-wheel power brakes

Owners expect more from a "PAYLOADER" and they get more because more of them are in service than all other makes combined. They're designed right and built right . . . they're sold and serviced right by a nearby "PAYLOADER" Distributor.

THE FRANK G. HOUGH CO.
750 Sunnyside Ave., Libertyville, Ill.

Send data on 4-wheel-drive "PAYLOADER" tractor-shovels as checked

- ☐ HO (2¼ yd. payload, 1¾ yd. struck)
- ☐ HH (1¾ yd. payload, 1⅓ yd. struck)
- ☐ HU (1⅓ yd. payload, 1 yd. struck)

Name _____

Title _____

Company _____

Street _____

City _____

State _____

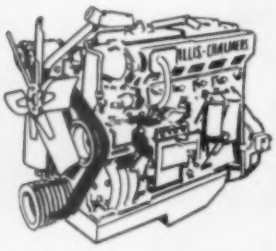
21

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

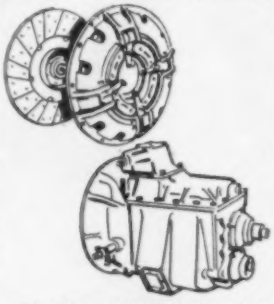
Look at the EXTRA WORK OUTPUT

the Allis-Chalmers TS-360 Motor Scraper gives you

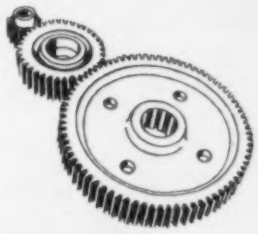
Here are some of the design features that put the TS-360 way out in front in steady performance, dependability and length of service life.



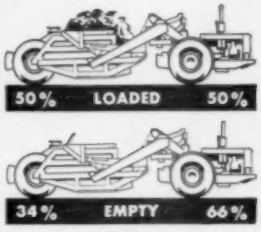
MORE USABLE HORSEPOWER. Allis-Chalmers diesel engine delivers 280 hp — 18.66 hp for each struck yard. This power gets the TS-360 away from the pusher fast . . . gives you speedier cycles, more trips per hour. In this engine, follow-through combustion holds effective working pressures to take advantage of better crankshaft leverage.



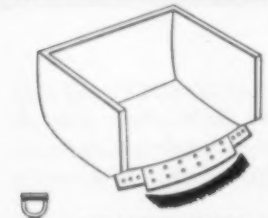
BIG-CAPACITY CLUTCH AND TRANSMISSION give fast, smooth operation under all job conditions. Clutch has air-actuated booster to reduce clutching effort and increase shifting efficiency. The heavy-duty transmission gives unmatched torque output in each gear range.



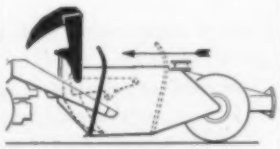
EXTRA-HEAVY FINAL DRIVES feature rugged differential assembly, carrier-housed drive shafts, final drive gears supported by large roller bearings and heat-treated drive axles. This long-life power train transmits maximum engine output for extra work volume, extra profit.



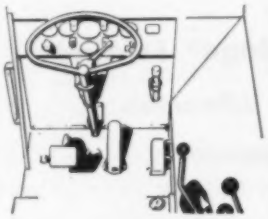
EXTRA TRACTION. The TS-360 motor scraper provides greater tractive effort, loading or traveling. Two-thirds of the empty weight is carried on drive wheels. Loaded weight is distributed equally between tractor and scraper wheels for better balance, increased flotation, safer hauling.



EASY-LOADING BOWL. Wide, low bowl design with curved bottom and offset cutting edge assures full capacity loads in less time. Curved bowl bottom "boils" dirt in, filling corners, heaping load with less spillage.



CONTROLLED DUMPING ACTION. Forward movement of ejector forces out load. High apron lift prevents material from jamming. This combination provides a continuous flow of material for a smooth, even spread.



POSITIVE STEERING. Two-stage selective power steering makes the operator's job easy . . . provides safe, feather-touch response and full maneuverability whether traveling at high speeds or in cut or fill.

OPERATOR CONVENIENCES add to production, too. Easy-to-reach controls, full visibility, four-wheel air brakes, roomy platform, comfortable air-foam seat are some of the features that help operator get maximum output from the TS-360.

More and more TS-360's are coming into your area every day. Ask your Allis-Chalmers construction machinery dealer where you can see them in action. Remember, too — your Allis-Chalmers dealer stocks True Original Parts and offers factory-approved service methods and factory-trained servicemen for your convenience.

ALLIS-CHALMERS CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

"Bit cost so low with TIMKEN® multi-use rock bits it's hardly an item"

...says Acme Construction Co.

LOCATION: By-Pass State and Federal Project, U. S. Route #52, Welch, West Virginia.

OPERATING CONDITIONS: Soft shale to very hard sandstone.

FOR precision drilling in mountain-side formations from soft shale to very hard sandstone, Acme Construction Co. of Beckley, W. Va., used only one size of Timken® multi-use bits. With controlled distribution of reconditioned bits, Acme got a bit cost so low they barely consider it an item.

Driller after driller gets similar savings. With correct and controlled reconditioning, Timken multi-use bits give the lowest cost per foot of hole when full increments of steel can be used in ordinary ground.

But they may not be the best answer for *all* your drilling problems.

When you drill in hard, abrasive ground, you get higher speeds and greater economy by switching to Timken carbide insert bits. They're your best bit for extremely deep holes, constant-gauge holes, small diameter blast holes.

Timken multi-use and carbide insert bits are important time-savers when your drillers change bits. They're interchangeable in the same thread series. And dozens of different Timken bits fit the same drill steel. Bits can be changed right on the job.

All Timken bits are made from Timken fine alloy steel and have special shoulder unions to protect the threads from drilling impacts. We're the only removable rock bit manufacturer that makes its own steel. We do it to control quality at every step of the way. To find out which bit will save the most and do the best job for you, call on Timken Rock Bit Engineering Service. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit... for every job

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

400 HOLES OF 12′ - 18′ DEPTH, PER 8-HOUR SHIFT, IN HARD MISSOURI LIMESTONE, ON 36 GALLONS OF FUEL

This is average day's work of this Jaeger "600" Rotary Compressor and two 4″ drifters, in Federal Materials Company's underground quarry at Cape Girardeau, Missouri. A. W. Zimmer, Jr., Secretary-Treasurer and Manager, reports: "We are more than 100% satisfied with the performance of the Jaeger rotary compressor. Efficiency and fuel economy are remarkable and, except for regular filter changes, maintenance expense has been zero."

Jaeger 600 Rotary ...*brings new efficiency to drilling*

A Jaeger "600" rotary produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

This explains why Federal Materials Company can keep two 4″ drifters drilling 8 hours in hard rock on only 36 gallons of fuel. You use less fuel, subject your engine to less wear, and turn your compressor as many as 9000 fewer revolutions every hour you work.

Smaller Jaeger Roto Air Plus® units have the same low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor —or let us mail you Catalog JCR-5.

CRAWLER AND BOOM MOUNTINGS for both 4″ drifters was designed by Federal Materials Co. to fit their particular needs.

50th year JAEGER CONSTRUCTION EQUIPMENT

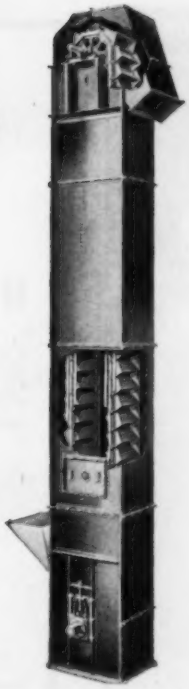
THE JAEGER MACHINE COMPANY

602 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • SPREADERS • FINISHERS • TRUCK MIXERS

When...

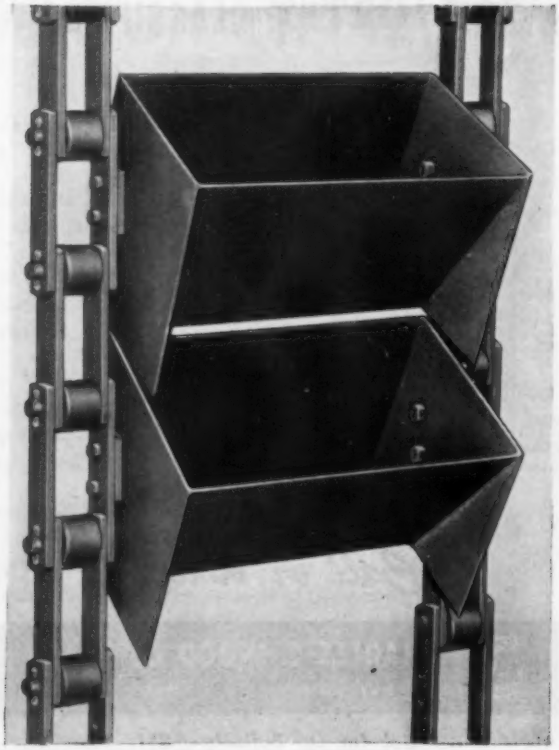
- ★ when large tonnages must be elevated . . .
- ★ when large lumps must be handled . . .
- ★ when continuous operation is involved . . .
- ★ when low maintenance is important . . .
- ★ when relatively slow-speed operation is advantageous



Why...

- ★ because balanced buckets hold more . . .
- ★ because of the greater number of close-spaced buckets . . .
- ★ because there's no overhung load on the chain . . .
- ★ because slower speeds permit smoother operation . . .
- ★ because chain is guided there's less whipping

...the LINK-BELT Super-Capacity is your best buy in bucket elevators



COMPARING bucket elevators, you'll find the Link-Belt Super-Capacity side-suspension design (at left) responsible for a host of performance improvements. Load is balanced — buckets are suspended at their center of gravity between the two strands of SS-type steel roller chain, reducing strain and wear.

The chain itself is specially designed for this service. Link-Belt's new short-pitch chain design means less impact at head sprockets. Thus, while operating at a speed fast enough to deliver high capacity, it is still well within the range required to assure low wear.

Your Link-Belt office has details. Call today.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,330

MAYFIELD, Wash.—Workmen, held by safety ropes, drill away on a cloudy stone cliff high above roiling Cowlitz River to prepare abutment for Tacoma City Light's $37,000,000 Mayfield Dam being built to bring needed electrical energy to the northwest Washington area.

NO MATTER WHERE YOU GO—
If You See Hose, You'll See
PUNCH-LOK HOSE CLAMPS

Write for Descriptive Literature or
See Your Nearby PUNCH-LOK Distributor

"The Sign of a GOOD Hose Clamp"

PUNCH-LOK Company

6437 **Dept. E, 321 North Justine Street, Chicago 7, Illinois**

EXTREMULTUS

NO DRIVE TOO TOUGH!

In its first year on the U. S. market,

EXTREMULTUS BELTING,

a laminate of leather and plastic, is out-performing and replacing existing V-belts, chains and flat belts everywhere!

- Speeds up to 10,000 feet per minute!
- Ratios as high as 20:1, with arcs of contact as low as 90°!
- Unexcelled elasticity — soaks up shock!
- From 1/10 to 6000 HP!
- Runs on standard pulleys!
- Greatly reduced bearing loads!
- Freedom from stretch eliminates take-up!
- Widths a fraction of belts replaced!

Immediate delivery from stock on standard sizes

Name your drive problem — let EXTREMULTUS solve it!
Write *today!*

EXTREMULTUS, INC.
405 Lexington Ave., New York 17, N. Y.

Trade Mark Reg.

AUTO VORTEX CLASSIFIERS

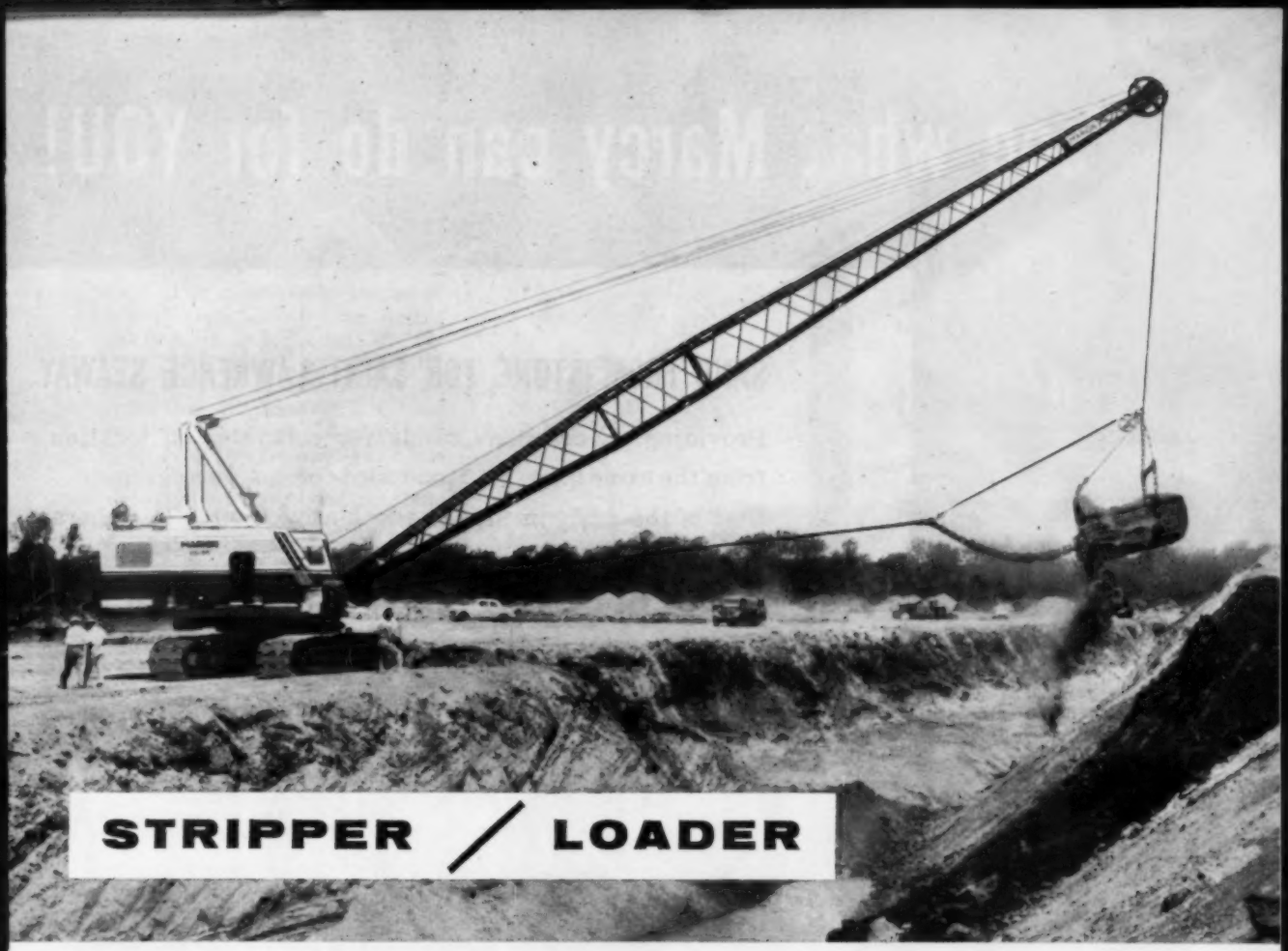
For Gradation Problems...

For Recovery of Fines...

Call or Write

CHARLES E. WOOD COMPANY
906 NORTH WATER ST. • MILWAUKEE 2, WISCONSIN

Ask for our Bulletin #81!



Marion 111-M Does Double Duty

A Marion 111-M is "doing a good job on two jobs" at a Texas sand and gravel plant.

Half of its job is to handle the stripping to keep the sand and gravel bank uncovered.

Then it handles all of the loading for a plant that is working two shifts to keep pace with expanded operations.

The Marion 111-M is equipped with a 5-yard bucket on a 90-foot boom, making it one of the biggest machines in this type of work in the Texas area.

The 111-M is a diesel machine, capable of traveling and working almost anywhere. It combines all of the advantages of a diesel machine with the smooth, fast swing action of Ward-Leonard electric control. The diesel power unit drives a generator for the electric swing motors; there are no swing clutches to overheat and no complicated maintenance problem.

Get the complete story on the Marion 111-M and the tough jobs it is handling throughout the world. Your nearest Marion Distributor is the man to see.

Whatever your job requirement, there is a Marion machine of the right size and type for greatest efficiency

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS			ASK FOR BULLETIN NO.
			CRAWLER MOUNT MAX.* STABILITY	MAX. USABLE	TRUCK MOUNT MAX. USABLE	
MARION 35-M	¾	¾	18T @ 10′	18T @ 10′	25T @ 10′	431
MARION 43-M	1	1-1¼	27T @ 10′	20T @ 12′	35T @ 15′	430
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′		398-D
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′		—
MARION 93-M	2½	—	80T @ 12′	50T @ 15′		397-F
MARION 101-M	3	—	84T @ 12′	57T @ 15′		417-A
MARION 111-M	4	—	169T @ 12′	105T @ 15′		402-C

For Comparison Purposes Only

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

Please send me Bulletin 402-C on the Marion 111-M.

Name ..... Title .....

Company .....

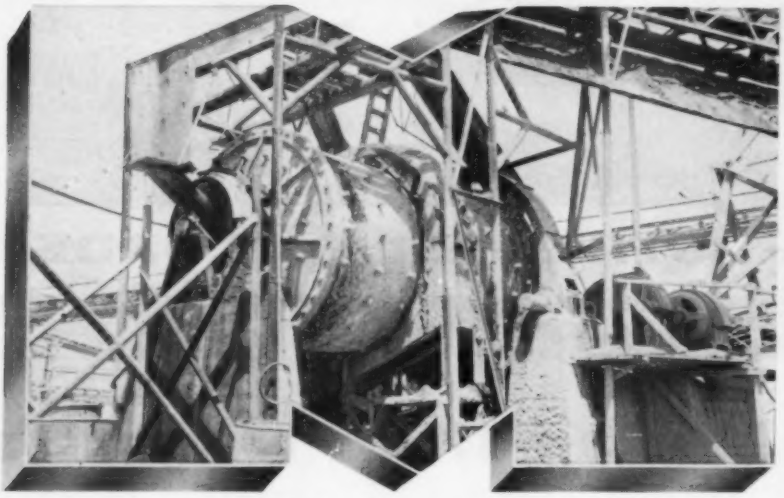
Address .....

City ..... State .....

see what Marcy can do for YOU!

SAND FROM STONE, FOR SAINT LAWRENCE SEAWAY

Providing **specification** sands for concrete, on location, from the same quarried stone used for coarse aggregate... that is the assignment for the Marcy Center Peripheral Discharge Rod Mills.



8' x 12' Marcy CPD Rod Mill owned by C. A. Pitts, General Contractors, Ltd., Cornwall, Ontario

PROVED ADVANTAGES OF MARCY CPD ROD MILL

Better Sand Product. Grinding in a Marcy CPD Mill will produce for you a uniformly cubical shaped product with same characteristics of shape and strength throughout the range of sizes produced. This results in:

- **stronger concrete**
- **better finish on concrete**
- **better slump characteristics**
- **use of less cement**

Operating Advantages. Compared with crushing, experience has proved you will get these additional advantages by grinding with Marcy CPD mills:

Low Cost... low maintenance, less steel consumption and less power per ton result in an overall cost generally less than 25c per ton, exclusive of ammortization.

Flexibility ... by varying rate of feed, pulp dilution and discharge port area it is possible to change gradation of finished product to meet different specifications.

Cleaner Operation
Wet or Dry Grinding
Capacities from 2 to 200 dry tons per hour.

NO EXTRA CHARGE FOR MARCY® EXPERIENCE

THE MINE AND SMELTER SUPPLY CO.

DENVER NEW YORK SALT LAKE CITY EL PASO

SALES AGENTS AND LICENSED MANUFACTURERS THROUGHOUT THE WORLD

Legal Decisions

(From page 230)

See also *Republic Corporation v. Atlas Corporation*, 113 S. W. (2d) 155. An Ohio corporation entered into a contract with its Kansas agent to supply merchandise on consignment. The merchandise was to be shipped from Ohio to the distributor or agent f.o.b. Kansas City. The Ohio corporation controlled the price at which the merchandise was to be sold; the contract prohibited the distributor from handling any other products; the distributor was to keep certain records, make reports, and was to permit the Ohio corporation to make inventories of the stock in the distributor's possession; all consigned stock was to remain the property of the Ohio corporation until sold; and the distributor or agent was to accept all merchandise shipped to it, warehouse it, and pay all incidental expenses.

The higher court held that by engaging in this business the Ohio corporation was not transacting or doing intrastate business in Kansas.

And again see *Davis v. Fidelity Company, 208 Ill.* 375, 70 N. E. 359, 363. Here a company entered into a contract whereby one Davis was appointed its "western agent." The arrangement was an exclusive sales agency contract. Soon afterward the company terminated the exclusive agency contract and Davis brought suit for damages, contending that appointment as agent was permanent. The Supreme Court said:

"We think the contract might be terminated at the will of either party."

On the other hand, it is important to know that some higher courts have held that although an exclusive agency contract specifies that the contract can be terminated at the will or decision of either contracting party, if the manufacturer cancels the contract prematurely, he must pay the agent a sufficient amount of money to compensate him adequately for expenses incurred while introducing and establishing the manufacturer's merchandise in the particular territory.

Insurance Policy Held Void

The higher courts consistently hold that an insurance policy is a "contract" and must be construed so as to give effect to the intention of the parties. Hence, if an insured violates any clause in an insurance policy, such policy automatically and immediately is rendered void.

For illustration, in *Everly v. Great*

Remove 4 Bolts and there's the impeller! . . . no need to disconnect piping

MORRIS

TYPE RX

Slurry Pump

Write for specifications, capacities, performance charts, and other helpful information. Ask for Bulletin 185.

Morris Type RX is the slurry pump whose impeller can be removed without disturbing the suction and discharge piping or the bearings! To get at the impeller and renewable shaft sleeve, you simply loosen four outside clamping bolts—slip them out of disc slots—take off the end cover. Impeller unscrews from shaft threads; shaft sleeve is removed through end cover opening.

At no point do you have to dismantle the piping. Lay-up time costs are less . . . pump is back in service quicker.

Use the Morris Type RX in Your Mining Operations

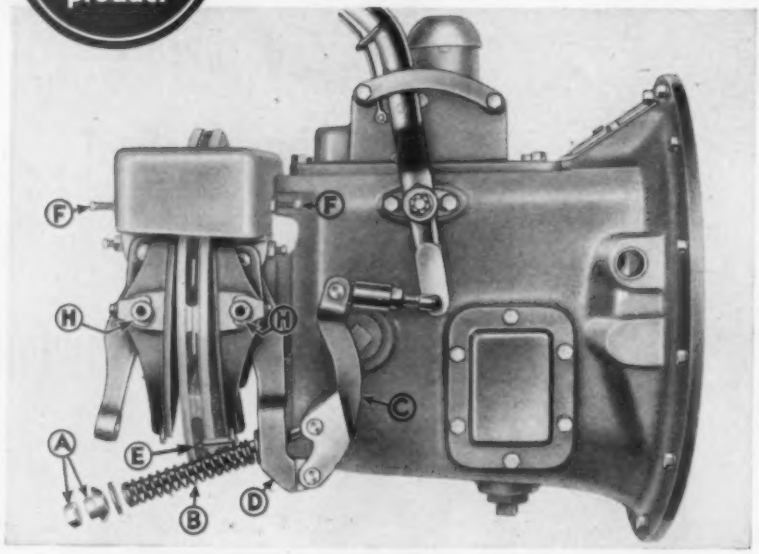
Morris Type RX is the product of nearly a century of experience in designing and building materials-handling pumps. It is specifically engineered to handle mixtures containing ore concentrates . . . tailings, slag and residue from filters and classifiers . . . all types of caustic or acid mixtures containing abrasives or solids.

MORRIS CENTRIFUGAL PUMPS

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

an ACCO product

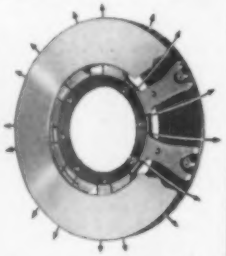
It Pays to Specify TRU-STOP Brakes



How TRU-STOP Brakes save more money than they cost!

TRU-STOP performance in just one emergency may more than offset any additional first cost. But their true economy shows up when it comes time to adjust or reline.

TRU-STOP brakes are adjusted and relined *without dropping the drive shaft.* Both are quickly and easily done with only a few simple tools. Down time is reduced to a minimum.



Longer Lining Life

• The terrific heat generated in braking cuts lining life. TRU-STOPS quickly dissipate this heat. Most of the disc is exposed to the air even during braking. And a cooling jet of air circulates through the disc, prolongs lining life.

See how easily adjustment is made
(illustration above)

1 Tighten nut A so that spring B exerts enough pressure to bring lever C to stop solidly against lever arm D.
2 Insert 1/32" shim between front shoe lining and disc and adjust pull-rod to maintain this clearance, first being sure to have hand-lever in full release position.
3 Further tighten nut A so that rear shoe lining is firm against disc but so that shim in front can still be removed. Remove shim.
4 See that tension spring E is in place, then adjust screws F so that linings are parallel with disc.

See how easily relining is accomplished

1 Remove nut A.
2 Remove spring E.
3 Apply hand lever so that rear arm can be swung back clear of tie rod and spring.
4 Remove shoe pin locks H, and drop shoe.
5 Replace relined shoes and adjust as per instructions.

ACCO

For full details write for booklet

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2
2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

American Indemnity Company, 294 Pac. (2d) 109, it was shown that a man, named Everly, held an automobile insurance policy which contained a clause that Everly would notify the insurance company within 30 days after acquiring a new automobile, or the insurance policy would be void. The testimony showed that Everly was a cement finisher foreman. As a part of his work he took some of his men to the job and while on the base, where a number of jobs were in progress, he took them back and forth between the various jobs as they were needed. He had asked his employer for a pickup truck for this purpose but none was available; and in lieu thereof it was agreed that he would use his own car and the employer would pay for the gasoline, oil, and expense of running it. When he acquired the Hudson on July 10, he used it for about a month and then stopped using it because of the abuse it was taking from the dirty clothes of the men and from getting stuck in the sand. About the middle of August he started "really using" a second-hand Ford.

Everly had a wreck while driving the used motor vehicle, and a fellow employee was injured. The insurance company refused to defend the injured employee's suit against Everly for damages, on the grounds that Everly had not notified the insurance company within 30 days following the delivery of the used vehicle to him.

The higher court held that the insurance company need not pay the loss or defend the suit against Everly.

Dolomite Processing Plants Operated by Kaiser Aluminum

The Kaiser Aluminum and Chemical Corporation, Oakland, Calif., is combining dolomite with sea water to make magnesium at three plants in Monterey County.

Kaiser Aluminum is mining dolomite in benches 75 ft. high from a deposit on the San Benito-Monterey County line. After core drilling in this area it was established that there is an 80-year reserve in the deposit.

Atlas Light Aggregate Ltd., St. Boniface, Manitoba, has planned an expansion program which consists of the purchase and installation of a modern mechanical feeder system and the erection of a suitable building to house it. Long-range plans include a second kiln, which will double present production.

DISCOVER

DAVIS

THE EQUIPMENT THAT LEADS THE WAY

FOR MORE PRODUCTIVE *LOADING TIME*

There's a reason why the man with a Davis Loader gets more work done... that's because the Davis Loader is designed to handle more jobs, and handle them easily and efficiently. Its widely copied "step-in" design... so popular that others have been forced to adopt it... is just one of the many features. Rugged construction, built to take the hard jolts and requiring less maintenance is another. Streamlined design gives maximum visibility and maneuverability. Little things, too, like an oil filter (standard only on Davis) and centralized hydraulic system, add up to make it your best loader buy whether you look at it from a dollar value or from a performance standpoint. Compare it, you'll agree. And don't settle for second best. Insist upon Davis.

Available for most popular makes of tractors and from better dealers in the United States and Canada. Write for literature and dealer's name

Another Davis First . . . Low-Cost, Completely Detachable Truck-Mounted Back-hoe.

The Davis Back-hoe, Running Mate to the Davis Loader, Can Work at Right Angles.

MID-WESTERN INDUSTRIES, INC.
1009 SOUTH WEST STREET, DEPT. Q
WICHITA 15, KANSAS

MINING OPERATORS USE McCarthy Drills

Heavy-Rugged Powerful

AT Bessemer Limestone & Cement Co., Bessemer, Pa., one McCarthy unit (above) averages 90 ft. per hour, drilling through hard blue shale and sand rock 34 ft. deep. Blast holes are drilled on 18-ft. centers. Two men handle the whole job, including setup and moving. McCarthy drills operate with gasoline, diesel or electric power units . . . on all types of mounts. McCarthy "money-savers" can work for you. See your nearby distributor or write Salem Tool direct for further information.

SALEM
THE SALEM TOOL CO.
1901 S. ELLSWORTH AVE.
SALEM, OHIO · U. S. A.

Manufacturers' News

George D. Williams has been appointed manager of Bailey Meter Company's Boston district office. He succeeds P. T. Reuter who died recently.

Bailey Meter Company, whose headquarters are in Cleveland, manufactures industrial instruments and automatic controls for the power and process industries.

Mr. Williams, who joined Bailey Meter in 46, was graduated from Worcester Polytechnic Institute with a degree in mechanical engineering.

G. D. Williams

W. D. Wallace

William D. Wallace will represent the Republic Rubber Division, Lee Rubber & Tire Corporation, Youngstown, Ohio, in a newly created "outstate" Michigan territory.

Mr. Wallace will headquarter in centrally located, Mason, Michigan. He will be responsible for the service and sales of Republic's line in the lower peninsula of Michigan, except for the Detroit area.

He has worked for the Pennsylvania Rubber Company, Jeanette, Pa., and the Olds Motor Works in Lansing and Chicago. Most recently he has been sales manager for a large Chicago Oldsmobile dealer.

Dorr-Oliver Incorporated announces the appointments of Quentin Cunningham of Pittsburgh, Penn., and the Engineering Corporation of Baltimore, Md., as sales representatives for D-O industrial and process pumps. With offices located at 101 Investment Building, Pittsburgh, the Cunningham organization will market, stock and service the Olivite, ODS, and "L" pumps and parts.

The Engineering Corporation of Baltimore, 409 South Caroline Street, Baltimore, Maryland, will distribute, stock and service Dorr-Oliver pumps for the chemical and allied industries located in southern Delaware and eastern Maryland.

F. R. Putnam has been named assistant to the general manager of the Blaw-Knox Equipment Division, Pittsburgh, Penna.

Mr. Putnam is a native of Red Wing, Minn., and has had extensive management experience in various industrial activities of the Navy Department as well as in private industry. Before joining Blaw-Knox Company, he was head of the management control branch of the Navy's Bureau of Ordnance and was responsible for control of ordnance shore establishments.

Construction of a new two-story $500,000.00 Metallurgical Research laboratory will begin in the spring of 1957 at The Timken Roller Bearing Company, Canton, Ohio. To be located immediately south of the company's Steel and Tube Division offices, facing on Harrison Avenue, it will be an ultra-modern structure of steel frame, brick and tile construction. The new fireproof laboratory building will centralize under one roof many of the metallurgical research facilities which are now located in several separate buildings.

Baughman Manufacturing Co., Inc., Jerseyville, Ill., recently announced the appointment of Pierre Decrouez as Latin America sales and development engineer. Mr. Decrouez will promote and establish Baughman Distributorships in the various Latin American countries. He is well known in Europe and Latin America having worked in these countries since 1930 for several well-known American companies.

Mr. Decrouez will promote the use and development of Baughman bulk material transport trucks and trailer transport units, lime and fertilizer spreaders, bulk feed bodies, bulk cement bodies, feed and fertilizer blenders, refuse transport units, a complete line of portable and stationary conveyors and belt and bucket elevators.

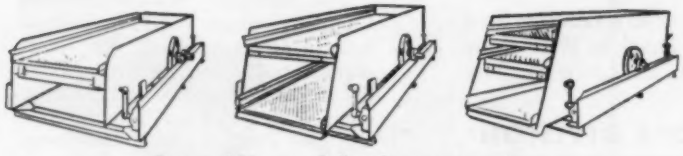
Kraft Bag Corporation, manufacturer of multiwall shipping sacks, with principal offices at 630 Fifth Avenue, New York, N. Y., announces the appointment of Ted Belfit as sales representative in Pennsylvania, N. J. and the Metropolitan New York area, taking over duties relinquished by John Wallace.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

Here's an operator with nothing on his mind but enjoyment of the rewards of a *successful, profitable* year. You know . . . there's a real moral in this picture. Today, the operators who are getting the profitable business are doing it with clean, accurately sized materials . . . and nothing less. That's why so many leading operators specify nothing but Seco Vibrating Screens for every screening operation in their plants. It's a fact, those smooth operating Seco Screens put you in a position to meet the strictest specifications of both private and governmental buyers.



Over 350 models for screening everything from Ag-Lime to Rip-Rap

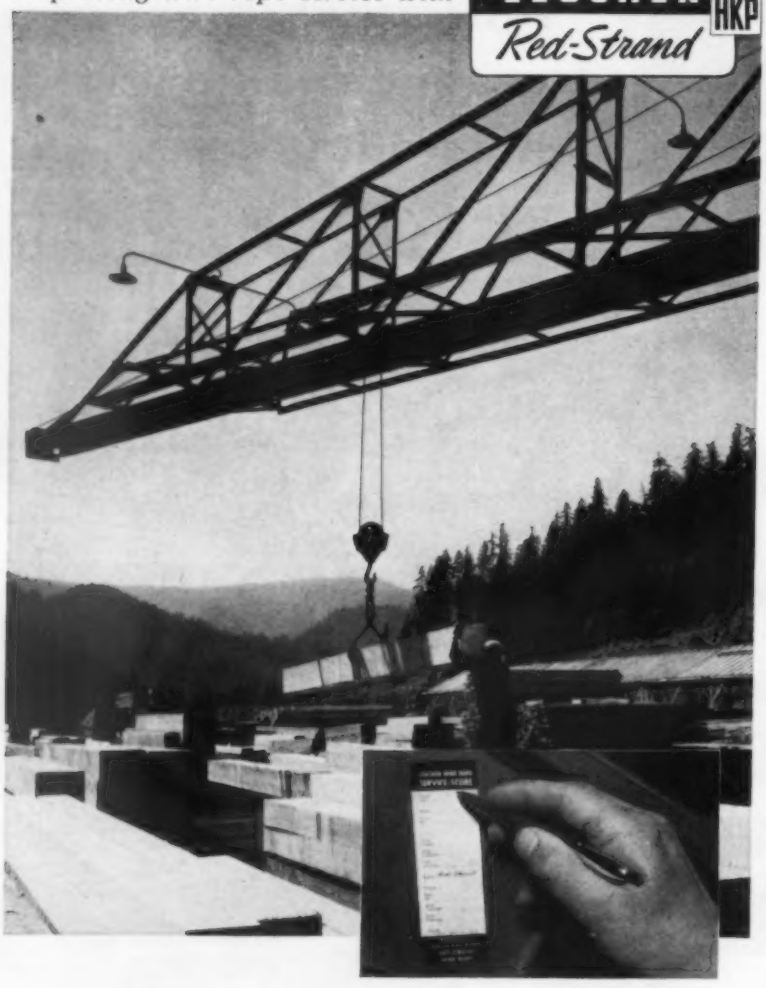
Go modern! Put Seco screens to work for you!

SEND FOR CATALOG #204

SCREEN EQUIPMENT CO., INC.

Buffalo 25, N. Y.

Improving wire rope service with **LESCHEN** HKP *Red-Strand*



How much can you save with Leschen wire rope service?

Wire rope costs can be reduced substantially—10%, 20% or more—by using the right rope type, construction and brand for every job.

How can you tell if you are using the right rope? How much can you save? There's a simple way to find out. You can obtain accurate, on-the-job performance data by using Leschen's Service-Score Sticker System. You'll prove to yourself which ropes work best. And when you see the score, you'll use more Red-Strand wire rope—because Leschen quality and Leschen engineering service can save you money.

Service-Score Stickers are available from any Leschen field man or distributor. Just ask, or write Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

HKP LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

The election of Stanley J. Roush to the newly created position of group vice-president of Borg-Warner, Chicago, Ill., has been announced. Several divisions of the corporation will report directly to Mr. Roush, who also will retain his present positions as president of the Atkins Saw Division of Borg-Warner in Indianapolis and president of Morse Chain Co., a subsidiary, in Ithaca, N. Y., and Detroit.

H. V. Kindseth, in charge of the Bemis Bro. Bag Company's department of physical research in Minneapolis, has been appointed director of research for the company.

Mr. Kindseth joined the Bemis organization in 1931 and worked on the development of the bag packing machinery and equipment produced by the Bemis Packaging Service Plant, Minneapolis. In 1948 he was appointed chief engineer for packaging service.

Jim McNab, who has been traveling California for the past few years, will cover this state for Flexible Steel Lacing Co., Chicago, Ill. He takes over the area so ably covered by Newt Crum.

Mr. McNab has had six years of engineering and sales experience in the machine tool field including two years of sales and service work in California.

John H. Granger and William R. Miller have been appointed as sales representatives for Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis, Missouri.

Mr. Granger will cover all of New Jersey and Staten Island, New York. He is a graduate in commercial science of the University of Seattle. His home is at Matawan, N. J.

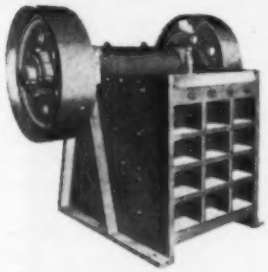
Mr. Miller's territory includes all of Arkansas, western Tennessee, northern Louisiana and most of Mississippi. Formerly with D-A Lubricant Co., he has had extensive contact with contractors, loggers, and miners in the area.

Pettibone Mulliken Corp., Chicago, Ill., announces that it is acquiring the Mercury Manufacturing Co., Chicago, by an exchange of stock. Terms of the acquisition have not been disclosed.

The Mercury Manufacturing Company, which has been in business in Chicago nearly fifty years, manufactures tow tractors, electric lift trucks and trailers. This line of equipment, which will be broadened, will give Pettibone Mulliken Corporation a more important place in the material handling industry.

ROGERS Builds a Wide Range of Portable Plants — Easily Transported
From Site to Site — High Performance, Low Maintenance

ROGERS EQUIPMENT
MEANS PROFITABLE OPERATION

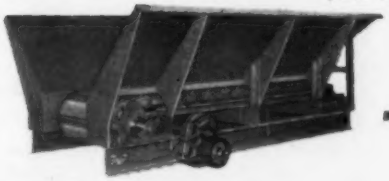


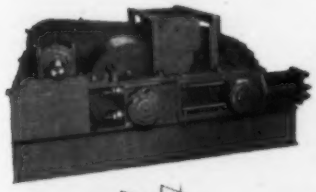
JAW CRUSHERS

Made in size 5 x 6 to 40 x 48. Long jaws, wide throw and narrow angle of nip result in high capacity. Oversize bearings are self-aligning.

FEEDERS

All widths and lengths of feeders are offered from the light duty pressed steel flight to the heavy duty cast alloy steel pan apron feeder. ROGERS also offers standard and heavy duty reciprocating plate feeders.





SECONDARY CRUSHERS

Secondary crushers manufactured by ROGERS for portable plant use consist of roll type and hammermill type crushers. These are heavy duty machines and ideally suited for stationary operation.

PORTABLE PRIMARY PLANTS

Primary plants up to 32 x 40 jaw crusher. Also available on skid mount for stationary or semi-portable applications.

Smooth operation of equipment assures profit-making production. Since 1901, ROGERS rock crushing equipment has been known for its quality and long service life in the quarry, sand and gravel and mining industries.

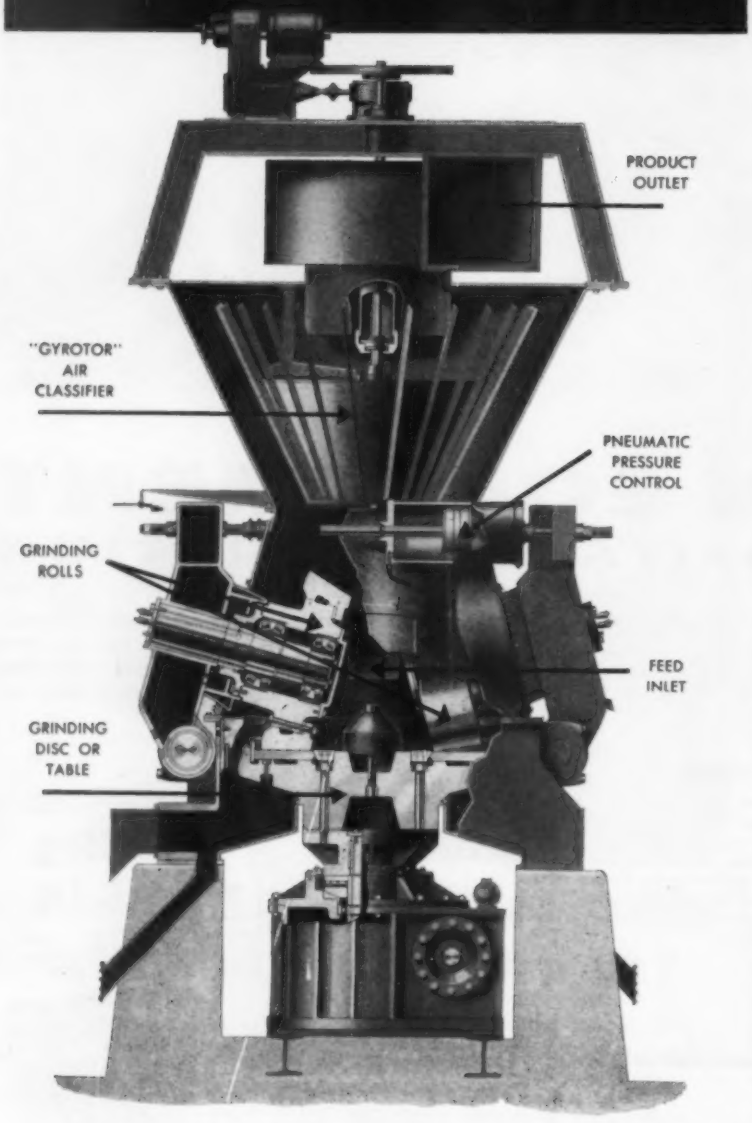
You Can Rely on . . **ROGERS JOPLIN**

WRITE for ROGERS complete, informative Jaw Crusher Bulletin.

R-105

ROGERS IRON WORKS COMPANY
Joplin, Missouri

DISC-ROLL MILL



The Hardinge Disc-Roll Mill is a roller-type mill with two adjustable, pneumatically loaded rolls for grinding material on a horizontal rotating disc or table (Loesche type). The Hardinge "Gyrotor" Air Classifier, in combination with the mill, provides a complete grinding, classifying, and drying system. A full description is given in Bulletin 52-8.

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA · 240 Arch St. · Main Office and Works

New York · Toronto · Chicago · Hibbing · Houston · Salt Lake City · San Francisco

Appointment of Howard F. Brady as manager of the Reo branch in Birmingham, Ala., has been announced by Reo Motors, Inc., Lansing, Mich. He will report directly to Walter S. Mason, Reo's southeastern regional manager.

Mr. Brady moves into his new position with more then ten years experience in the trucking industry. In that time he has been with Autocar Co., serving two years as a traveling auditor and seven years as assistant to the regional manager in Dallas, Texas. Before joining Reo, Mr. Brady was manager of The Great Dane Trailer Co. of Texas in Dallas.

H. F. Brady

J. S. Gillespie

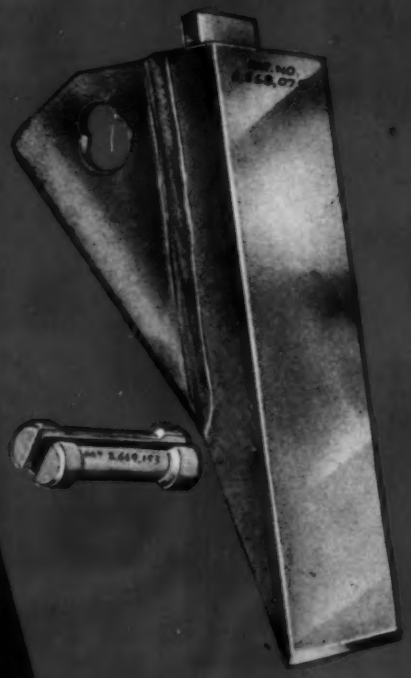
J. S. Gillespie, acting manager of the industrial diamond project for General Electric's Metallurgical Products Department, Detroit, Mich., has been named manager of engineering. In addition to his new duties he will continue as acting manager of the diamond project.

Mr. Gillespie joined General Electric in 1936 as an engineer for the then carboloy department. Before becoming acting manager of the diamond project, he was manager of product planning. Previous to that he served in several of the organization's district offices, as manager of carbide tool and wear parts sales engineering, and as manager of product sales.

The directors of the Baltimore and Ohio Railroad have re-elected Howard E. Simpson, president; Roy B. White, chairman of the board, and other principal officers of the company, as follows:

E. H. Burgess, vice president and general counsel; W. L. Price, vice-president, finance and accounting; G. Murray Campbell, vice-president and executive representative in Chicago; Frank J. Goebel, vice-president, personnel; W. C. Baker, vice-president, operation and maintenance; J. W. Phipps, Jr., vice-president, traffic; Douglas C. Turnbull, Jr., vice-president, research and development; R. S. B. Hartz, secretary, and W. H. Ball, treasurer.

Teeth that really dig!

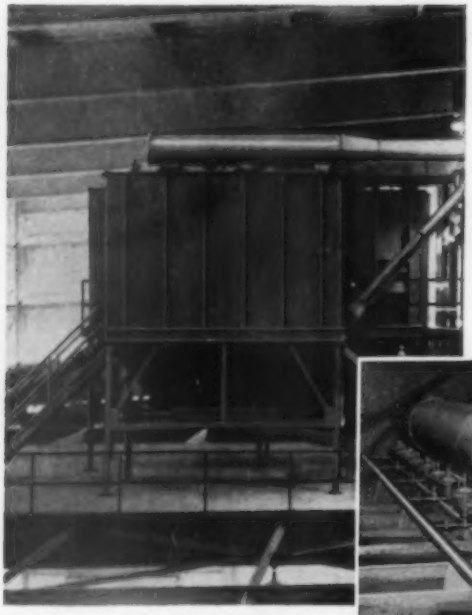


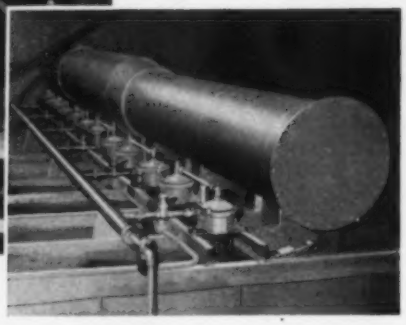
There is no substitute for
ROLLED
ALLOY STEEL
HAMMER FORGED
POINTS

H&L TOOTH COMPANY
1540 South Greenwood Avenue,
Montebello, California

Norblo gives you continuous peak-load Dust Collection

through automatic bag cleaning





Plants running full blast can ill-afford down time for equipment repairs and maintenance. Dust collection around the clock without interruption is commonplace with Norblo Automatic Bag Type Arresters.

Complete time-cycles for progressive automatic bag shaking are controlled by highly efficient electric timers. Only one compartment is cut out at a time, and that for just a few seconds, with *no* drop in efficiency for the installation as a whole. Norblo's compartment construction is the time-saving solution to inspection, maintenance and repair in busy plants . . . For "good housekeeping" or for salvage, Norblo Automatic installations have many design advantages wherever continuous high recovery of industrial dusts and fumes is important.

It pays you to write at once for latest information on Norblo Automatic Bag Type Dust Arrester that assures constant high efficiency dust handling.

THE NORTHERN BLOWER COMPANY

6407 Barberton Ave., Cleveland 2, Ohio OLympic 1-1300

Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

Lee O. Witzenburg, formerly general sales manager of The Cleveland Worm & Gear Company, Cleveland, Ohio, and its affiliate, The Farval Corporation, has been appointed vice-president in charge of sales for both firms. Mr. Witzenburg has been associated with the two companies since 1950.

A graduate of the University of Nebraska with degrees in electrical engineering and commercial engineering, Mr. Witzenburg was subsequently associated in sales engineeering capacities with the Gates Rubber Company and the Tann Corporation.

L. O. Witzenburg

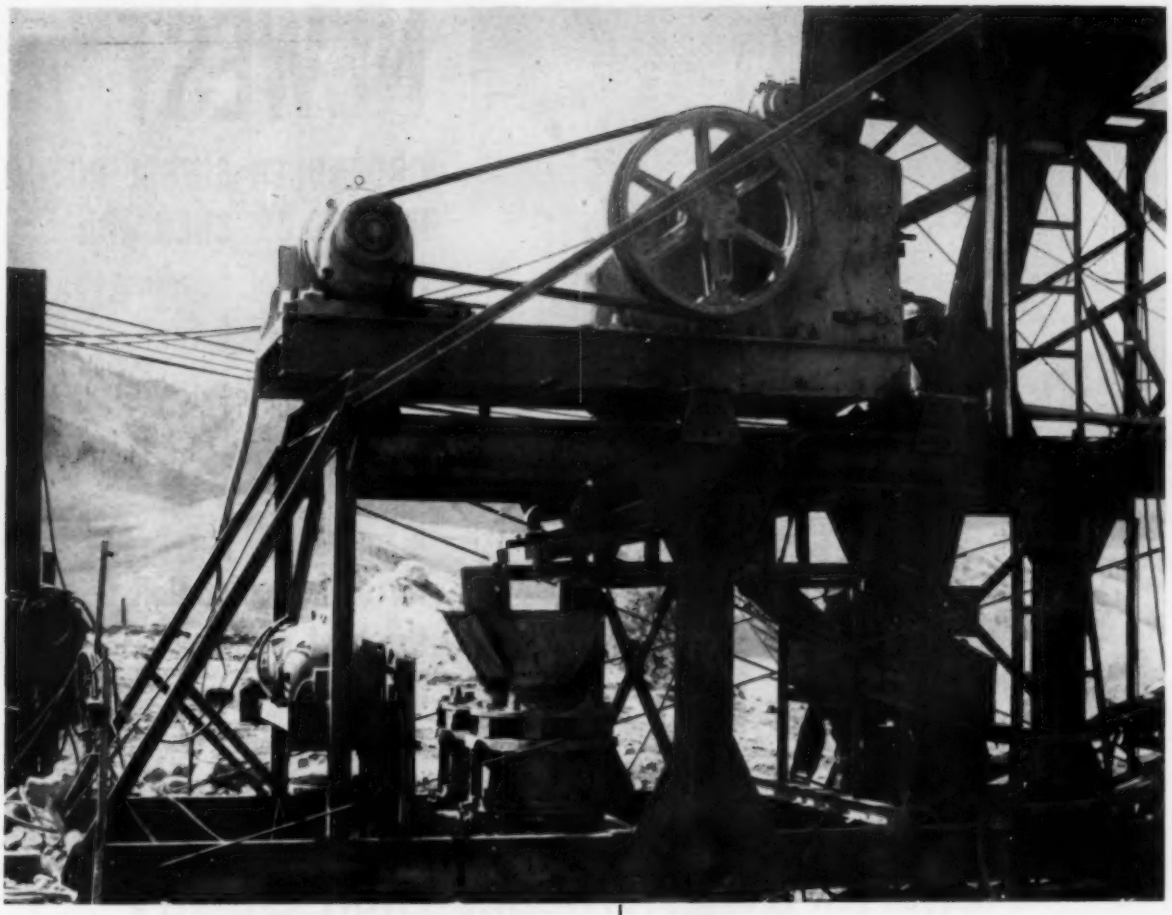
J. W. McEvoy

American Hoist and Derrick Company of St. Paul, Minn., announces that John W. McEvoy, a former native of St. Paul has been appointed vice-president and general manager of the Lebus Manufacturing Company, a new wholly owned subsidiary of American Hoist, located in Longview, Texas.

Mr. McEvoy, a veteran employee with 17 years of service, was formerly works manager of the American Hoist plant in South Kearny, New Jersey, and more recently superintendent of structural works in the St. Paul plant.

R. F. Knobloch has been appointed mid-western belting sales engineer for the conveyor and elevator belting department of United States Rubber Co., New York, N. Y. Mr. Knobloch was previously a sales engineer in the Passaic, N. J., office of the belting department. In his new post, he will make his headquarters in Chicago.

Richardson Scale Co., Clifton, N. J., has announced the appointment of Charles Graham as manager of service and parts department. In this capacity he will supervise Richardson's entire force of field service engineers and service activities of various branches of the company throughout the country. He has been with Richardson since 1949, serving as a project engineer in the engineering department.



how Kue-Ken® Crushers make short jobs profitable with knock-down plant

Setting up his plant quickly and getting high production rate permits this operator to take on short jobs and make them profitable. Kue-Ken provides the means. His 36″ x 10″ jaw crusher, two 18″ gyratory crushers, conveyors and vibrating screen are rapidly assembled on steel frames and bolted together. Plant capacity is about 100 tons per hour minus 5/8″. Rig is quickly dismantled and moved to next job. Kue-Ken operates inexpensively. Jaw plates outwear those of other crushers at least 5 times, power consumption is far less, breakage from overload is eliminated by flywheel release that is quickly reset. Filtered oil lubricates the mechanism in a sealed, dust-free crankcase to prevent wear.

WRITE FOR CATALOG

STRAUB MFG. CO., INC. • 8386 BALDWIN ST. • OAKLAND, CALIF.

KUE-KEN® CRUSHERS

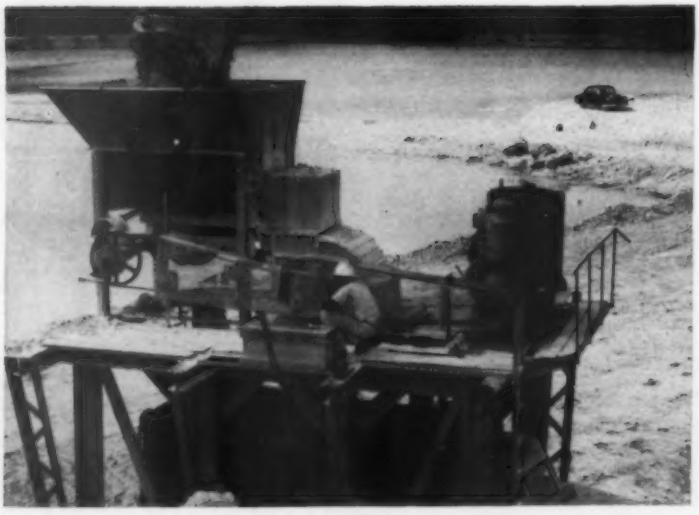
"CRUSHING WITHOUT RUBBING"

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

DEALERS:

SEATTLE, WASH. ..... Washington Machinery Co.
SALT LAKE CITY, UTAH ..... Lund Machinery Co.
SAN ANTONIO, TEX. ..... Closner Equipment Co.
PORTLAND, ORE. ..... Contractors Equipment Co.
LOS ANGELES, CALIF. ..... Garlinghouse, Fremon Co.
PHOENIX, ARIZ. ..... Stapley's
DENVER, COLO. ..... Union Supply Co.
CASPER, WYOMING ..... Moss Equipment & Supply Co.
VANCOUVER, B. C. ..... Universal Equipment Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England



VISIT US DURING THE ROAD SHOW
BOOTHS 217-218, CONRAD HILTON HOTEL, CHICAGO

Manufacturers of Mobile or Stationary Rock & Gravel Crushers

GRUENDLER

GRUENDLER CRUSHER & PULVERIZER CO.
2915 N. MARKET ST. • Dept. PQ-157 • ST. LOUIS 6, MO.

NEWEST

GRUENDLER SINGLE ROTOR IMPACT CRUSHER with Plate Feeder handling wet coral rock for Road Rock Incorporated, Fort Lauderdale, Fla. — 150-180 yards hour. A tough job, but easy for a Gruendler Unit, the best quality money will buy. "Since 1885" Write for Bulletins

Hendrick H ... Means High Quality for Quarries

Hendrick . . . Pioneer Perforator of Special Quality Steels for 80 Years

Take Hendrick's 80 years of experience in selecting and specifying the best analyses of steel for the crushed stone. industry. Add to it Hendrick's 80 years of experience in perforating plate for vibrating screens and you end up with a combination that can't be beaten.

That's why Hendrick Perforated Plate stands up longer and affords more accurate sizing. No other screening medium can compare to it for uniformity of mesh, for non-blinding clearance and for long, trouble-free service life. Hendrick perforated *H* quality steel is supplied in any desired size or shape of openings.

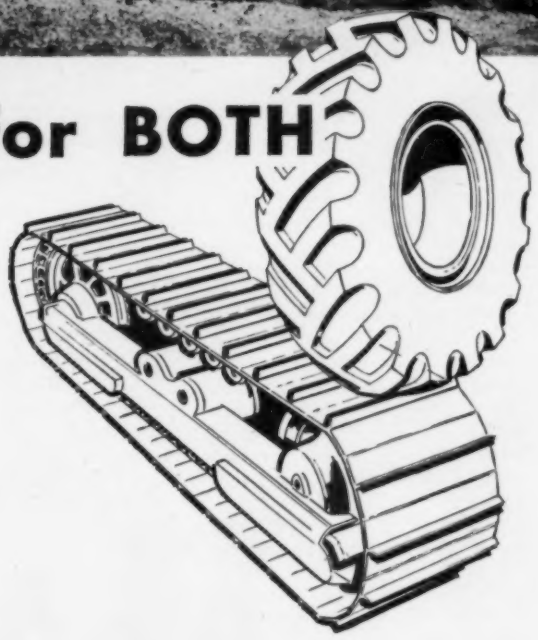
It can also be furnished flat or corrugated. Write for details.

SEE OUR CATALOG IN SWEET'S

Hendrick
MANUFACTURING COMPANY
39 DUNDAFF STREET, CARBONDALE, PA.
Sales Offices in Principal Cities

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT AND HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING • SHUR-SITE TREADS • ARMORGRIDS • HENDRICK HYDRO-DEHAZER.

There's a place for BOTH



Work problems today demand modern equipment that can do specific jobs faster and at lower cost. Tournatractor is a modern tractor designed to take advantage of . . . *power, traction, speed* and *mobility.* It does not offer as much drawbar horsepower at speeds below 2 miles per hour as do track-type tractors of equal engine horsepower. But, if your job conditions are such that you can capitalize on *speed* and *mobility* — with a machine that delivers comparable traction at present day speeds, we suggest you consider the *new* LeTourneau-Westinghouse Tournatractor. The cost is 10% below that of track-type tractors with torque converters and comparable engine horsepower.

Before you buy — EVALUATE

1 — Your demands for power
2 — Requirements for traction
3 — Advantages of speed
4 — Need for mobility

After giving careful consideration to all of these factors when selecting a tractor, questions in regard to your specific application may still be in your mind. The best way to dispel all doubt about the qualifications of any tractor is to see it perform on your job.

We will be happy to arrange the demonstration of a Tournatractor on your job, to prove that this rubber-tired tractor has the *speed* and *mobility* that can pay off for you. Call or write today. No obligation!

Tournatractor—Trademark Reg. U.S. Pat. Off. CT-1145-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

MAKE BULLDOZERS DOUBLY EFFECTIVE

. . . . with PRECO *Back-Rippers*

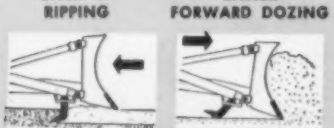
These Preco Back-Rippers, mounted on the reverse side of the bulldozer moldboard, dig in and rip **while the tractor backs up.** They make blading easier and faster because they rip out rocks, roots and hard ground, enabling the tractor to work a full blade with less horsepower on its next trip. This is **double-duty bulldozing.**

Like contractors all over America, you can save time and money by using Preco Back-Rippers in building pioneer roads, clearing land and rights-of-way, in gravel pit operations, slate breaking in coal strip mines, for logging operations and mounted on pusher tractors for faster scraper loading.

See your Caterpillar Dealer or send the coupon for information.

BACK UP RIPPING

EASIER FORWARD DOZING



Preco Back-Rippers are completely automatic in operation — they dig in on the back-up trip and ride on the surface when going forward. There are no controls and, when desired, they can be locked up out of the way.

SEE PRECO BACK RIPPERS

in the Caterpillar Exhibit at the

ROAD SHOW

Kaiser Chemicals Division of Kaiser Aluminum & Chemical Sales, Inc., Oakland, California, has established a new sales office in Birmingham, Alabama.

Samuel T. Johnston, Kaiser Chemicals sales representative covering Tennessee, Mississippi, Alabama, North Carolina, South Carolina, Georgia and Florida, makes his headquarters at the new office, located at 1206 South 20th Street, Birmingham.

Prior to joining the company in 1955, Mr. Johnston was a metallurgist for the U. S. Steel Company.

S. T. Johnston

R. C. Brigleb

Robert C. Brigleb has been appointed sales manager of the replacement sales department of The S. K. Wellman Company, Cleveland, Ohio, to fill a vacancy created by the retirement of Thomas A. Novotney. In addition, James E. Clegg, Philadelphia branch manager, will move to Cleveland to become assistant sales manager of the replacement sales department.

Mr. Brigleb joined The S. K. Wellman Company in 1953, as assistant sales manager of the replacement parts department after having had previous sales experience in the replacement parts field with Thompson Products and the Standard Products Company.

The C. H. Grant Company, 2515 Willow Street, Oakland, Calif., has been appointed manufacturer's representative for the sale of Cleaver-Brooks asphalt heating and pile-driving equipment.

Cleaver-Brooks Company, Milwaukee, Wis., originators of the self-contained boiler, produces 50 and 125-hp. portable steamers, Peak-Temp oil boosters using high flash point oil, pumping and stationary oil and gas fired boilers from 15 to 600-hp.

The C. H. Grant Company are specialists in the field of road-building equipment and can assist in the setting up of complete asphalt heating plants. The company's territory is located in 45 counties in the vicinity of San Francisco.

A new 12-million dollar drill manufacturing plant will be built near Richmond, Ind. by Bucyrus Erie Company, according to an announcement from the company's home offices in South Milwaukee, Wisc.

The new plant, which will be erected on a 148-acre site three miles west of downtown Richmond, will provide 300,000 square feet of floor space for the manufacture of drilling machines.

Koppers Company, Inc., Pittsburgh, Penna., will build a full-scale commercial plant for the production of expandable polystyrene beads. The new facilities will be constructed at Koppers' large Kobuta, Penna. operation where the material has been produced in semi-commercial quantities since Koppers first announced its availability more than two years ago. Sold under the trade name Dylite expandable polystyrene, this material is produced in small beads which when heated in molds expands to take the shape of the enclosure.

A. A. Downend, vice president of the Sanderson Cyclone Drill Company, announces the appointment of the C. A. Lewis Company, Aurora, Illinois, as a distributor of the Cyclone line of drills and tools.

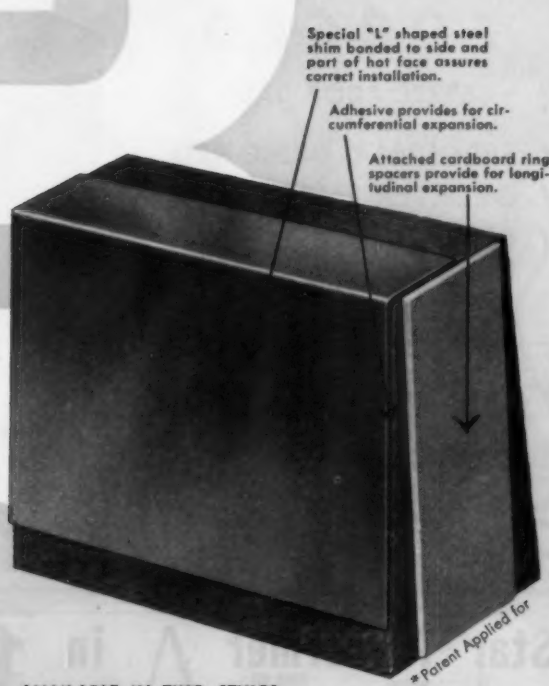
Establishment of a plant for the manufacture of Cummins diesel engines at Shotts, Lanarkshire, Scotland, has been announced by Cummins Engine Company, Inc., of Columbus, Indiana. The new company will be a wholly owned subsidiary of the Indiana firm, and will be known as Cummins Engine Company, Limited.

Cummins' officials estimate the total investment at Shotts will approximate $4,000,000 during the next two years for machinery, tools, fixtures, dies, materials and equipment. The greater part of the required machinery will be purchased from United Kingdom sources.

D. J. Cummins, who is a director and vice-president—engineering of Cummins, will direct operations at the Shotts, Scotland factory. Mr. Cummins has been with Cummins Engine Company, Inc., since it was formed in 1919. In 1943 he was appointed manager of the Research Laboratory, and in 1945 he became manager of Quality Control and later manager of Engineering and Quality Control. Mr. Cummins was elected vice-president-engineering in 1948, and became a member of the company's board of directors in 1952.

*Kaiser Unitized Cement Kiln Liner**

T3


Special "L" shaped steel shim bonded to side and part of hot face assures correct installation.
Adhesive provides for circumferential expansion.
Attached cardboard ring spacers provide for longitudinal expansion.
* Patent Applied for

UNMATCHED FOR SPEED AND EASE OF INSTALLATION IN CEMENT KILNS

As a cement producer, you know that kiln down-time can cost you up to $200 an hour. But now producers using Kaiser T3 Unitized Kiln Liners have proved you can reduce liner installation time 30% to 50% . . . **time you can re-claim for profitable production!**

The unique Kaiser Chemicals development that makes this possible is the bonding of accessories to Kaiser Periclase-Chrome Brick. And in addition to increasing production, you get these extra benefits:

ASSURES CORRECT INSTALLATION

When installing Kaiser T3 Unitized Kiln Liners, shims are automatically aligned between all bricks. Part of the shim overlaps the hot face, permitting easy visual inspection.

TAKES THE GUESSWORK OUT OF EXPANSION ALLOWANCES

The thickness of the adhesive between shim and brick provides correct allowance for circumferential expansion. Bonded cardboard spacers give correct provision for longitudinal expansion.

COATS FASTER

When the kiln is fired up, the overlapping part of the shim melts, oxidizes, and combines with the feed to speed formation of hot zone coating.

REDUCES INVENTORY PROBLEMS

Because the shims and cardboard spacers are bonded to the brick **at the factory,** you need no separate orders or stock records for them.

AVAILABLE IN TWO STYLES

Kaiser Unitized Kiln Liners are available in all sizes of the standard 9"x6"x3½" Series Arch Brick and Wedge Brick:

In Style T3 (standard) the shim overlaps approximately half of the hot face and extends to within ½" of the cold face. (The gap functions as a heat buffer between shell and shim.)

In Style T2, the shim overlaps approximately half of the hot face and extends up to the cold face. Shims are standard 16-gauge plate. Both styles are available with or without cardboard spacers (standard on T3); and with 14-gauge shims instead of 16-gauge.

Let us show you how this new Kaiser Chemicals development can help you reduce kiln down-time **and** give you longer liner life. Contact your Kaiser Chemicals sales engineer now.

Call or write Kaiser Chemicals Division, Dept. C72x41, Kaiser Aluminum & Chemical Sales, Inc., at any of the addresses listed below:

PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Refractory Brick and Ramming Materials • Castables and Mortars
Magnesite • Periclase • Deadburned Dolomite

See "THE KAISER ALUMINUM HOUR." Alternate Tuesdays, NBC Network. Consult your local TV listing.

✓ . . . check the advantages

for the

"Cape Ann"
FORGED
STEEL DROP BALL

✓ SPECIALLY DESIGNED
✓ GREATER IMPACT
✓ ECONOMICAL

2000 to 12000 lbs.

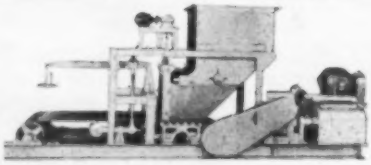
Budget-minded quarrymen specify the "Cape Ann" Drop Ball to insure record rock-breaking efficiency. Equipped with a forged connecting link, protected by a deep recess, adaptable for swivel or shackle. Strong alloy steel pin. Low cable replacements. Furnished complete as shown.

Write today for full details

Cape Ann Anchor & Forge Co.
Gloucester • Massachusetts

Star Performer ▼ SCHAFFER POIDOMETER in 1957

for SCALING BULK MATERIALS



PROPORTIONS
RECORDS
WEIGHS
BLENDS
MIXES
FEEDS

OVER 1400 NOW SERVING INDUSTRY

Write for Catalog No. 5

Equip your plant for a leading part in the New Year's expanded production program.

Install SCHAFFER Poidometers—proved high-caliber performers that maintain product uniformity and establish peak output-and-profit records. High-speed, automatic Poidometers supply accurate weight-information at any processing stage. Durability "built-in." Available with remote control for showing and changing feed rate, and with total weight recorders.

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

Frank C. McManus has been named president of the Anthony Company, Streator, Ill., according to an announcement received from Ben Kaplan, chairman of the board of directors. He succeeds Glenn A. Duis, who resigned in order to devote more time to personal interests.

The retirement of T. M. Scruggs and his succession as manager of the Visinet Mill, St. Louis, Mo., by Ray P. Perry has been announced by A. H. Clarke, vice-president in charge of production for Bemis Bro. Bag Company. The Visinet Mill produces open-mesh woven paper fabrics for packaging and industrial uses.

Mr. Perry was employed as an administrative trainee at the Visinet Mill in 1946 and was named assistant manager in 1952.

R. P. Perry

L. E. Pounders

F. C. Chenault, manager of the Memphis plant and sales division of Bemis, will retire after over 40 years of company service. He will be succeeded as manager by L. E. Pounders, now assistant manager.

Mr. Pounders started his Bemis career in 1936, as a trainee in the Memphis plant, moving into sales work the following year. He was made assistant to the superintendent in 1938, returning to that position after military service as a naval lieutenant from 1942 to 1945, and was made superintendent in 1947. He was appointed assistant manager in 1952.

The Pfarrer-Schmidt Engineering Co. is moving from their present offices to 3555 W. Peterson Ave., Chicago 45, Ill., and will be known as the W. H. Pfarrer Company.

The trade name, know-how, and other assets of Metrotype Corporation, Michigan City, Ind., have been acquired by Bailey Meter Company.

Key personnel will continue in the engineering and manufacture of "Metrotype Systems" under the new management.

(*Continued on page* 276)

Galion Allsteel Model 19TTE Excavator trailer dump with 45 ton Model 88381 Duo-scopic Hoist.

1,920 cubic yards a day on a 15 mile haul

Galion Allsteel Model 19TTE Excavator trailer dumps are outstanding performers in the excavating equipment fleet of Greco Contractors, Chicago, Illinois.

Greco operates 8 of these units on the Congress Street Expressway job in Chicago. Loaded by shovel or dragline, each of these trailer dumps handles up to 30 cubic yards of material and makes 7 to 8 fifteen mile round trips to the dump each shift, through heavy traffic.

Built to haul large quantities of excavated material over the highway to distant disposal points, Excavator trailers are engineered to provide even weight distribution on trailer and tractor axles. And, they are constructed to withstand the damaging effects of shovel loading.

An order for 3 additional Model 19TTE's has just been placed by Greco Contractors. Describing the Congress Street job, Mr. P. J. Greco says: "We are hauling a mixture of rock, broken concrete and a very sticky mud. The combination of 6-inch radius floor corners, tapered body, barn door type tailgate and good dump angle gets rid of the material with no difficulty. Stability in dump position is remarkable. We also like the way the load is distributed on the trailer and tractor axles."

Find out how Galion Excavator trailer dumps can meet your heavy material hauling requirements. Your nearby Galion Allsteel distributor will recommend the model exactly suited to your job. Call him today! AA-1233

See us at the Road Show—Booth 423

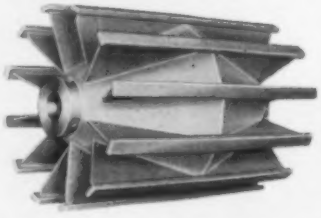
THE DUO-SCOPIC **GALION** ALLSTEEL BODY COMPANY • GALION, OHIO

FOR GREATER MATERIAL HANDLING EFFICIENCY...

GREATER PROFIT

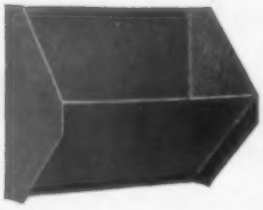
STANDARD WING TYPE SELF-CLEANING PULLEY

- SELF CLEANING
- STRONG REINFORCED WELDED CONSTRUCTION
- LOW COST



So strong it can withstand the most punishing loads without flinching . . . because its all-steel welded construction gives it far greater strength with less weight at lower cost.

CONTINUOUS ELEVATOR BUCKET STYLE #2



Built to take the hardest use you can give it and come back for more, this bucket is typical of the complete line of low cost, rugged Standard Steel Buckets — available in Salem, Style "A," shelf type and other continuous style buckets.

STANDARD BIN GATE

Speed material handling with this Standard gear-operated bin gate, which has all-steel welded construction. Other styles in Standard Bin Gates also available.

Slash material handling costs by converting to Standard. Write today for catalog showing the complete Standard line.

The Standard Metal Mfg. Co. SINCE 1921

STANDARD METAL MFG. CO.
111 CENTER ST. MALINTA, OHIO

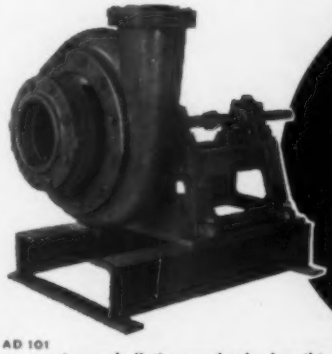
For Handling Abrasive, Fine Mesh Solids at Minimum Cost!

Lightning

MODEL RU
RUBBER LINED PUMPS

OUTLAST METAL LININGS 5 TO 10 TIMES!

Ideal for handling silica sand, glass sand, coal silt, remnants from classifiers or any other abrasive slurry. The simple design of the pump and its long wearing construction assure long, trouble-free service life, high operating efficiency and a minimum of care. Available in 6" x 8" and 4" x 6" sizes.



- NO PERIODIC ADJUSTMENTS
- ONLY THREE WEARING PARTS
- NON-CLOGGING IMPELLER
- STAINLESS STEEL SHAFT

AD 101

A new bulletin completely describing this pump is available . . . write

KANSAS CITY HAY PRESS CO.
Manufacturers of Heavy-Duty Lightning Sand and Gravel Pumps
801 Woodswether Road Kansas City, Missouri

Attractively Bound Pit & Quarry Volumes

Six issues, Jan. through June or July through Dec., bound in best grade Dark Green washable buckram, imprinted name on cover, cost but $3.85 per volume.

- Bound journals serve as an immediate reference for research and information.
- Ship journals parcel post.
- Within thirty days after receipt, bound volumes will be shipped prepaid anywhere in the U.S.A.
- Full remittance must accompany order.

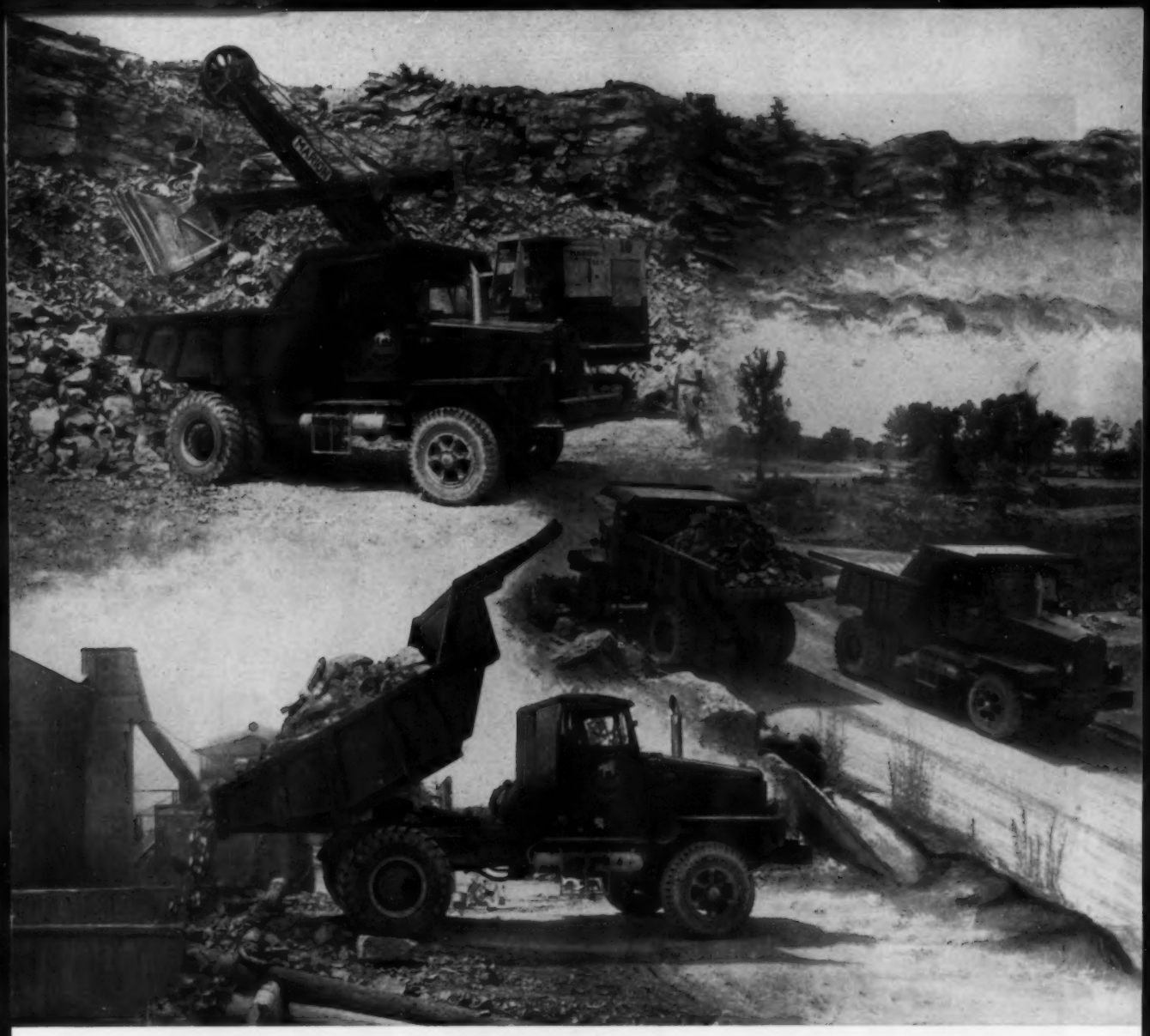
PUBLISHER'S AUTHORIZED BINDERY SERVICE
5809 W. Division St. Chicago 51, Ill.

PLATEGRIP

PLATE FASTENERS FOR CONVEYOR BELTS

Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from ¼" to 1½" thickness. *Write for Catalog Sheet.*

ARMSTRONG BRAY & CO.
5394 Northwest Highway, CHICAGO 30, U. S. A.



"loading . . . hauling . . . dumping . . . you can't beat 'em!"

That's what Mr. Arnold R. Lyon of Harry Berry, Inc. says about their Mack LRX dumpers. As general manager of their quarry at Hopkinsville, Kentucky, Mr. Lyon appreciates the dollar-and-sense value of Mack trucks.

"Ours is a short haul from the quarry to the crusher, averaging 75 trips a day. The resultant strain from the constant loading and dumping, as well as the 16% grade a good part of the way, really gives our trucks a tough workout. Moreover, we find that we are able to produce more work with our Macks because their balance, short turning radius, and maneuverability speed up spotting under the shovel and dumping at the hopper.

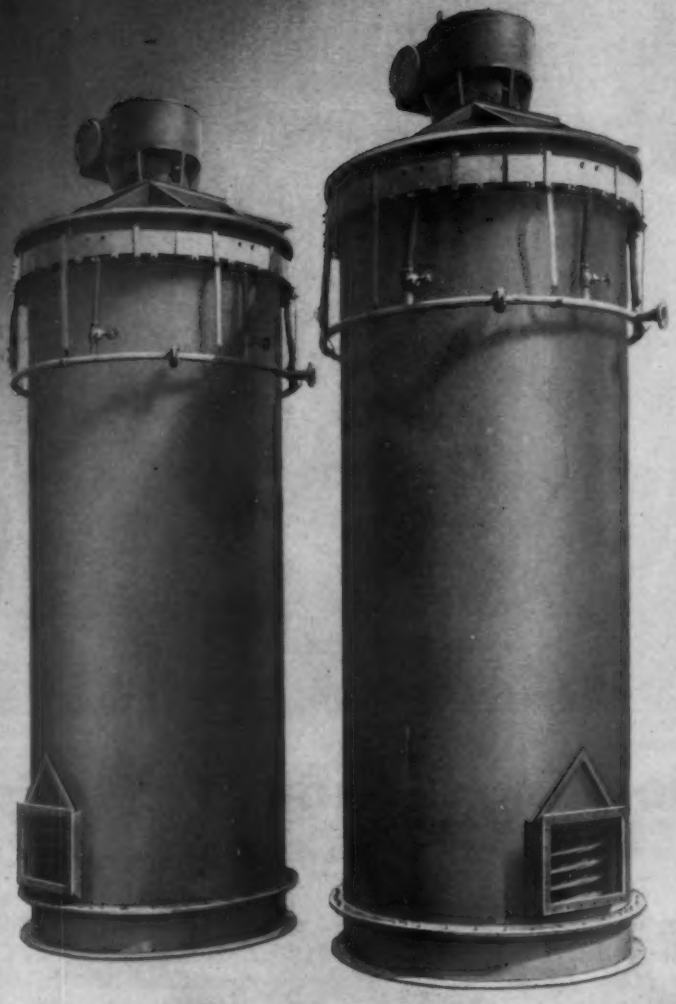
"Our Macks haul 16- to 17-ton loads day in and day out . . . averaging 2 gallons of fuel per hour. In 3½ months, outside of routine servicing, we have not had a single second of downtime. But aside from the economy and performance, our drivers like them better than other makes . . . easier to handle . . . better riding . . . greater sense of confidence. Certainly, it's been our experience that you can't buy a better truck than a Mack."

Mr. Lyon has learned about Macks from experience. If you have a hauling job, especially a tough one, why not let your Mack dealer or representative tell you about all the satisfied Mack users in your area. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

4573

SMIDTH
cement coolers



The Smidth Cement Cooler, developed especially for cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging, is externally water-cooled. The hot cement is introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. High cooling efficiency is assured by the intimate contact of cement and the water-cooled surface.

The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated here are two 6' 6" dia. x 17' 7" high Smidth Coolers ready for shipment.

F. L. Smidth & Co.
Engineers and Machinery Manufacturers
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

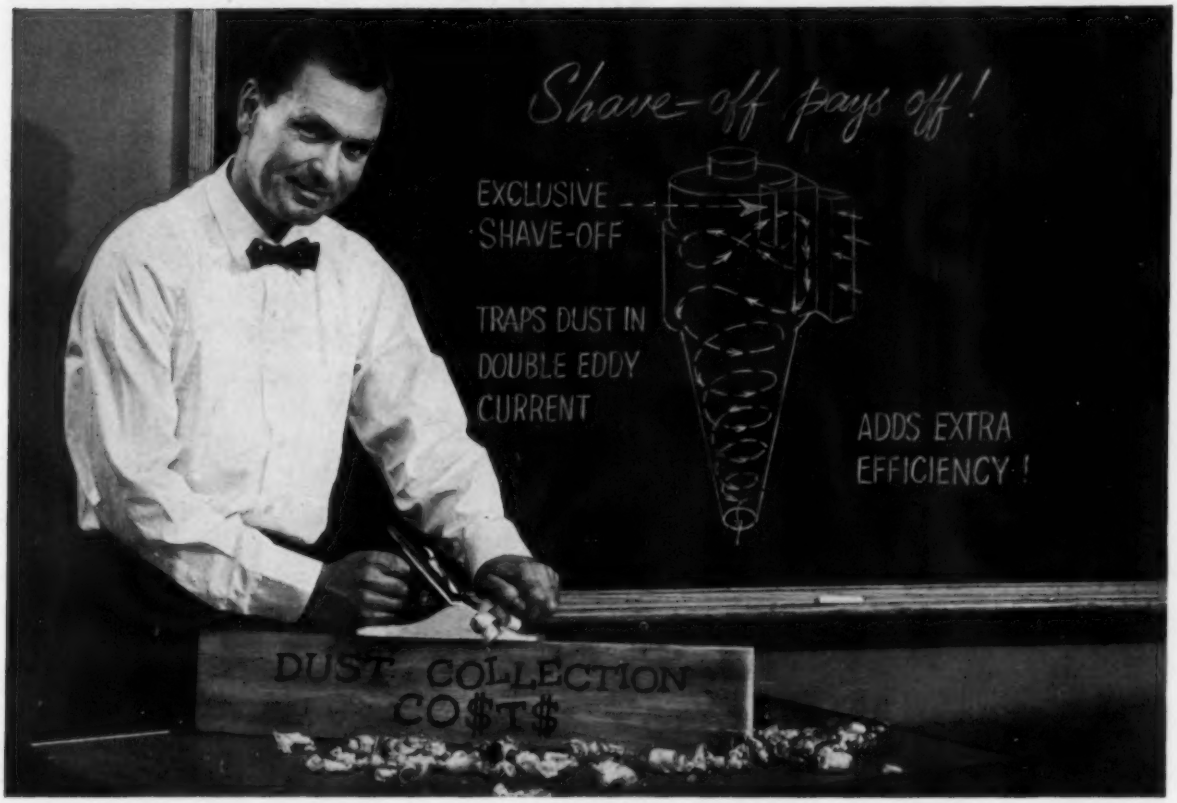
F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

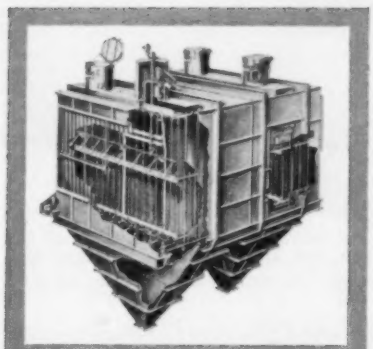
F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

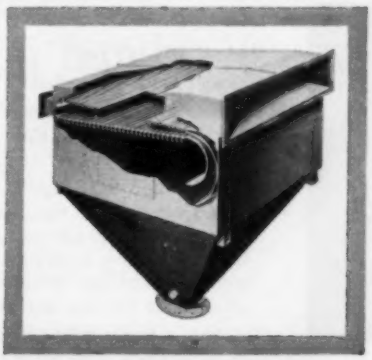
How Buell's exclusive Shave-off pays off in extra dust collection efficiency





Buell SF Electric Precipitator also delivers extra dust collection efficiency, due to unique Spiralectrodes and Continuous Cycle Rapping.

Proper proportioning, side entry of dust-laden gases, add even more extra efficiency and long, maintenance-free life to Buell Cyclones. Large diameter design eliminates bridging and clogging, keeps efficiency high under varying loads.



Buell Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for either natural or mechanical draft installations.

For more specific data about Buell's *extra efficiency*, write Dept. 18-A, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

buell®

MECHANICAL ELECTRICAL *Experts at delivering Extra Efficiency in* **DUST COLLECTION SYSTEMS**

TORRINGTON SPHERICAL ROLLER BEARINGS GIVE YOU THESE FEATURES

- inherent self-alignment
- conformity of rollers to races
- positive roller guidance
- land-riding bronze cages
- integral flange for stability
- maximum radial and thrust capacity
- long, smooth service life
- even load distribution

Mated perfectly ~ for life!

Make a point to notice the roller end and center guide flange in a Torrington Spherical Roller Bearing. The perfect mating there means a smoother, longer bearing life.

Roller end and flange surfaces alike are ground to a common spherical radius centered on the common vertex of bearing axis and roller axis. Under all load conditions, the rollers bear lightly but constantly against this flange. This guides the roller positively with minimum friction and prevents skewing. Stress concentrations leading to early failure are avoided, so the bearing will serve you many good turns longer.

This is the kind of feature Torrington builds into its bearings out of its experience with all major types serving in all kinds of equipment. Care for such details is matched only by our care in mating the *right* bearing to the *right* job. In this, your Torrington representative is an expert: call on him when you need help. *The Torrington Company,* South Bend 21, Ind.—Torrington, Conn.

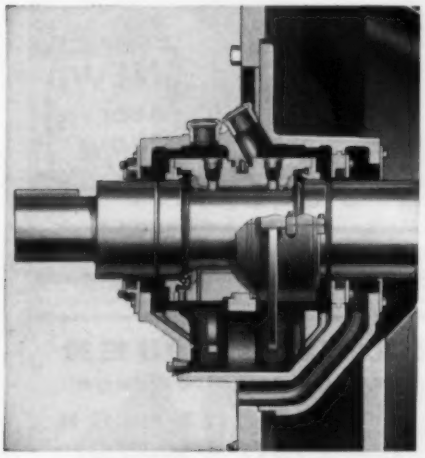
TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

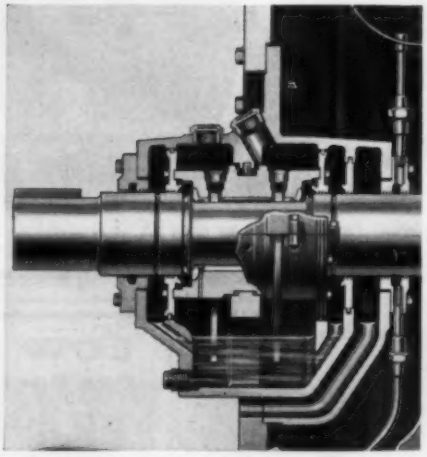
SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

NEW Bearing Design Means Better Motor Performance

Allis-Chalmers capsule-type sleeve bearings now perfected for complete motor line



Standard capsule-type sleeve bearing



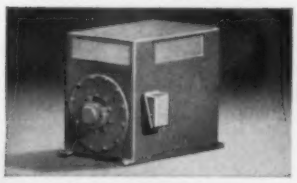
High speed capsule-type sleeve bearing

A new feature—an improved capsule-type bearing design—has been added to the Allis-Chalmers complete line of large end-shield bearing motors. This new bearing will give you better motor service, simplified maintenance and longer motor life through features like:

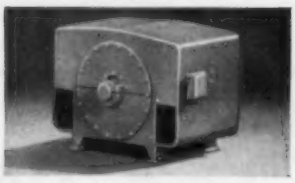
- Dust-tight, leakproof enclosure protects bearing from dirt, dust or abrasive materials.
- Venting system prevents oil leakage — keeps oil and vapor from getting into motor enclosure.
- Dual oil-rings insure bearing surface lubrication — either ring can adequately lubricate bearing.
- Split end-shield gives easy accessibility to winding and air gap — without disturbing capsule or bearing alignment.

Drip-proof or splash-proof cage motor

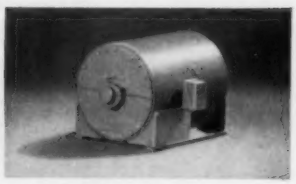
Synchronous or wound-rotor motor



High speed cage motor

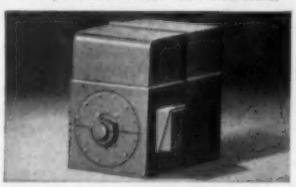


Weather-protected motor



Totally-enclosed fan-cooled motor

Totally-enclosed forced-ventilated motor



Water-cooled or inert-gas-filled motor

Capsule-type bearings are standard on these Allis-Chalmers motors.

You get MORE from Allis-Chalmers motors

More design and construction features — more application help. For complete information, contact your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

SAVES BETTER ELECTRICALLY

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-5032

"New Tire" Performance ... 40% Lower Cost!

SOUTHERN TIRE RETREADS

Southern Tire top quality retreads save you up to 40% of the cost of new tires, yet you get new tire performance. You not only save on equipment expense, but also on operating expense, because giant tire pick up and retread delivery by Southern Tire representatives, *at your job site after work hours*, minimizes equipment downtime. Call your tire dealer for all the facts about Southern Tire retread performance — proven by over 55,000 tires!

World's finest giant tire molds . . . Superior 3-sectional molds assure no buffing to breaker strips regardless of growth.

Rock Service, Traction Types or Rib Treads to suit your job — All sizes from 1110 x 24 to 2700 x 33 and new sizes: 29.5 x 25, 29.5 x 29 and 33.5 x 33.

NEW! ADDRESS, PHONE NO.

SOUTHERN TIRE COMPANY

1414 Broadway
SHEFFIELD, ALA.

Phone Collect
Sheffield 4740

for IMPROVED PERFORMANCE
SPRAYING SYSTEMS
SPRAY NOZZLES

• Choose from the industry's most complete selection of capacities and types to obtain the nozzles that best fit your job. Improve spraying efficiency and lower your spraying costs. Wide choice of nozzles for washing, dust control operations and concrete curing.

Write for Catalog 24

WRITE FOR Catalog 24 ... forty-eight pages with complete data on nozzle types, capacities and performance.

SPRAYING SYSTEMS CO.
3224 RANDOLPH ST., BELLWOOD, ILL.

LOW COST POWER
For Fast "Secondary Breakage"

FREDERICK
CAST SEMI-STEEL
DROP BALLS

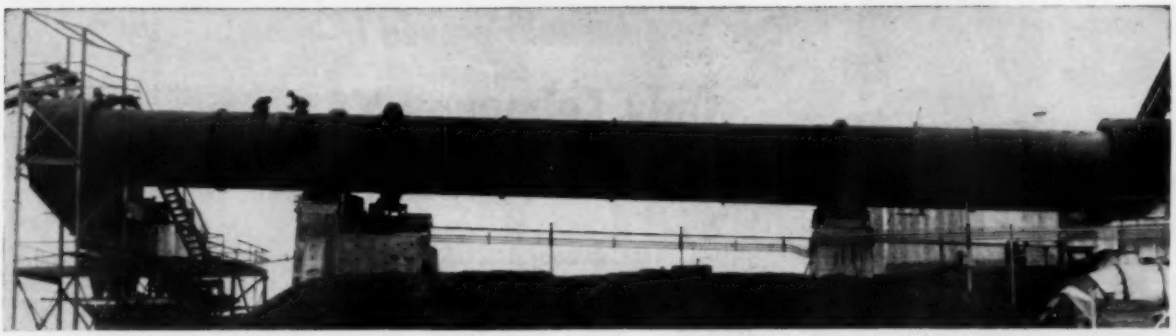
Tough, rugged Frederick Drop Balls give you crushing power where you want it, when you want it . . . cut down expensive drilling or blasting . . . give long, economical service with little or no maintenance. Exclusive "Pear shaped" design withstands greater impact—drops straighter. "E-Z Swing" recessed steel eye gives cable protection plus free swinging action. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Nickel alloy standard on all 4000 lbs. or over—or special alloys furnished on request. Balls can be furnished with replaceable pins. Special release hooks for free dropping also available.

Write us today for prices and illustrated literature. Order Balls direct or see your nearest Equipment Dealer.

	Wide Range of Sizes and Weights:						
Pear shape (lbs.)	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.)	500	1000	2000	5200			
Spherical shape (lbs.) (for magnet use)	470	950	1650	2400	3000	3700	5400

FREDERICK IRON & STEEL, INC.
FREDERICK *Established 1890* MARYLAND
Phone: MOnument 3-5111

CENTRIFUGAL PUMPS • MUNICIPAL AND GRAY IRON CASTINGS

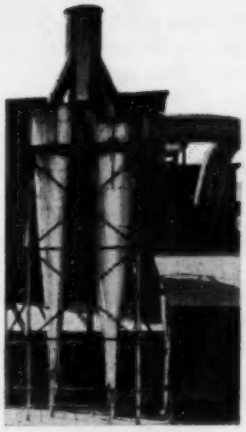


9½'x125' NODULIZING KILN INSTALLED, COLUMBIA, TENN.

We design and manufacture

ROTARY KILNS
•
DRYERS
•
COOLERS
•
LIME HYDRATORS
•
DUST COLLECTORS

and design the plants in connection with the same.



NEW HIGH EFFICIENCY DUST COLLECTOR

7'x60' CLAY DRYER INSTALLED IN HENDERSONVILLE, N. C.

W. P. HEINEKEN, INC.

ENGINEERS MANUFACTURERS

50 BROAD STREET • NEW YORK 4, N. Y.

HETHERINGTON & BERNER

DREDGING PUMPS

performance-proven on the toughest jobs

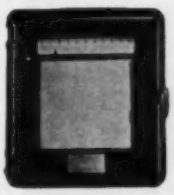
H&B ESTABLISHED 1867

Hetherington & Berner sand and gravel pumps are available in two general types: *STANDARD*, (4", 6" and 8" sizes) with semi-steel parts, for ordinary working conditions and moderate heads; and *DREADNAUGHT*, (6", 8", 10", 12" and 15" sizes) with manganese steel parts, for heavy duty jobs with stringent head conditions.

Write for Bulletin DP-147.

HETHERINGTON & BERNER INC.

753 Kentucky Ave. Indianapolis 7, Indiana



With a continuous record of O_2 CO_2 and Combustibles of the kiln exit-gas before him, the burner can regulate combustion to obtain maximum fuel economy, and high quality clinker production. Cambridge Gas Analyzers give him this essential record, accurately, quickly and continuously. Customers tell us that these instruments pay for themselves many times over! *Models available:* single point O_2, two point O_2 Combustibles, three point O_2-CO_2-Combustibles. *Send for literature.*

CAMBRIDGE GAS ANALYZERS

CAMBRIDGE INSTRUMENT COMPANY. INC.

3519 Grand Central Terminal, New York 17, N. Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

"Our hammer mill proved it—

Only Colmonoy No. 1 hard-facing lasts so long, costs so little!"

Colmonoy No. 1 hard-facing stands up under rough conditions involving impact and abrasion. Its cost is moderate and it welds easily. Great on equipment like dozer blades, shovel teeth, crusher rolls, and conveyor parts.

The new low-hydrogen coating provides excellent arc stability and makes weld cleaning between successive passes unnecessary. You can use it on vertical surfaces, too. Colmonoy No. 1 deposits are hard: 58 to 63 Rockwell C.

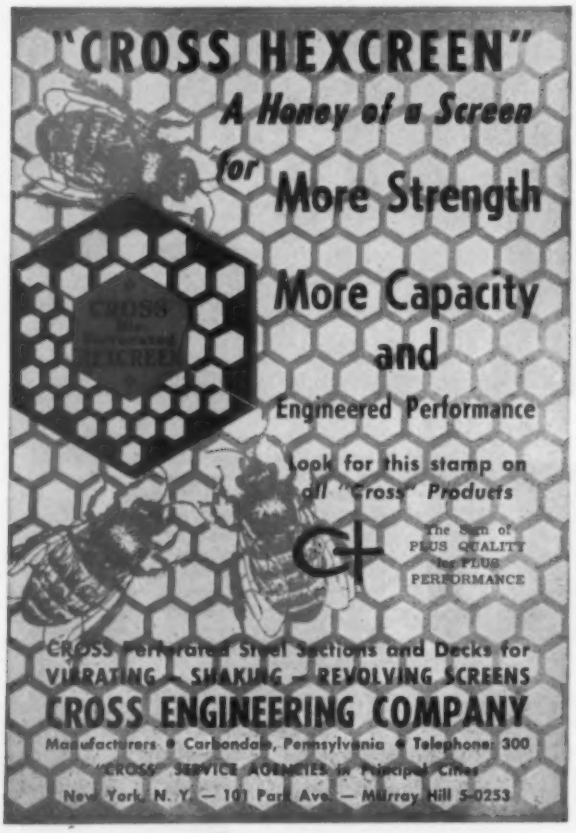
Write today for more information about Colmonoy No. 1 and the rest of the Colmonoy line of hard-facing alloys.

HARD-FACING ALLOYS

19345 JOHN R. STREET **WALL COLMONOY** CORPORATION DETROIT 3, MICHIGAN

BIRMINGHAM • BUFFALO • CHICAGO • HOUSTON • LOS ANGELES
MORRISVILLE, PA. • NEW YORK • PITTSBURGH • MONTREAL • GREAT BRITAIN

Available as 1/8, 3/16, and 1/4-inch diameter electrodes (DC), in 10 and 50 lb. metal containers.



Still Available!

NEWEST

PORTLAND CEMENT

PLANT MAP

This map shows the locations of all the portland cement plants and distributors now operating in the United States, Canada, Mexico, Alaska, Hawaii, and Cuba, plus those that will be completed in 1956. These plants are listed alphabetically, by state and city, so they can be located easily. Production capacity in barrels, types of process, and brand names of each firm's products are also shown.

The map is 34 by 40 inches and is printed in black and white on heavy, durable 60-lb. paper stock. Prices are as follows:

1-10 maps	$1.00 each
11-25 maps	$ .75 each
more than 25 maps	$ .50 each

Please make your request for these maps on your company letterhead. Also, send along a check, cash or money order to cover the number of maps you wish to purchase.

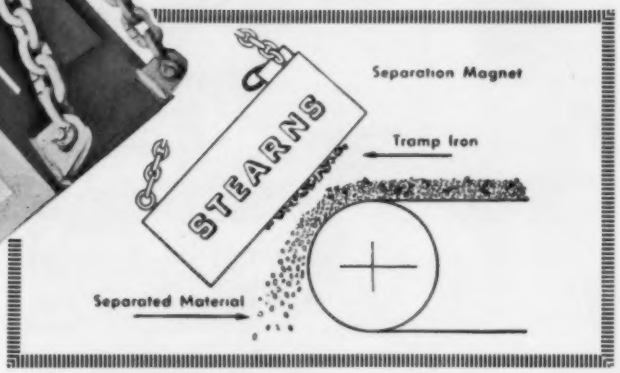
PIT AND QUARRY PUBLICATIONS

431 S. Dearborn St. • Chicago 5, Ill.

STEARNS SUSPENDED MAGNET

stops iron junk, protects your product and your plant

Magnet can be suspended at head pulley of conveyor, in position shown, or anywhere along the belt. At right, principle of operation of Stearns rectangular suspended magnet. Optional cable suspension for easier control of angle.



A Stearns rectangular suspended magnet gives you positive and efficient removal of tramp iron — even on heavily loaded, fast conveyor lines.

The Stearns rectangular magnet design permits its powerful, deep-penetrating magnetic force to remove tramp iron effectively from entire width and depth of material burden at belt speeds in excess of 600 fpm. The magnet operates efficiently where other equipment can't do the job.

Greater Flexibility

Stearns suspended magnets overcome space limitations because they can be placed over head pulleys or anywhere along the belt. Some are installed to remove tramp iron before material moves onto the conveyor—thus safeguarding the belt and other processing equipment from damage.

Stearns suspended magnets are economical to install and operate. There's no need to modify your existing conveyor systems.

Standard or Custom-Built

Magnetic specialists at Stearns design and build rectangular or circular suspended magnets, electro or permanent magnetic pulleys in standard sizes — or to your specifications. Get complete details from your Stearns representative.

Check these advantages:

- *All-welded, moisture-proof construction*
- *No moving parts that require replacement*
- *Single-coil construction for magnetic field stability*
- *New design of magnet coil enclosure affords maximum heat dissipation*
- *Vacuum-impregnated windings for long life, dependable operation*

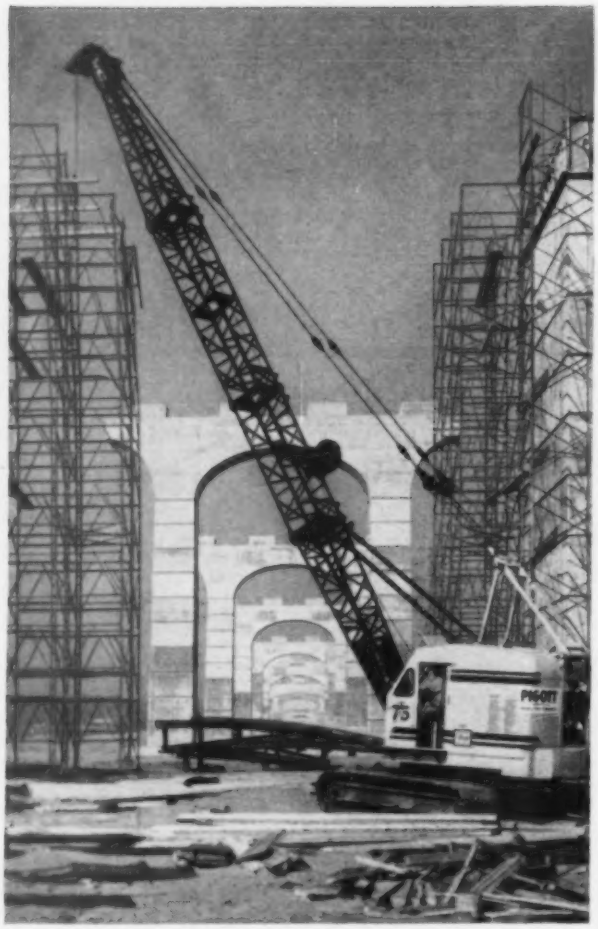
FREE BULLETIN AIDS SELECTION

Send today for new bulletin describing five major types of Stearns suspended separation magnets. Gives you complete specifications and simple method of selecting the proper size and type of magnet for your application. Ask for Bulletin 1031-N.

STEARNS MAGNETIC PRODUCTS

A DIVISION OF THE INDIANA STEEL PRODUCTS COMPANY • VALPARAISO, INDIANA

635 South 28th Street • Milwaukee 46, Wisconsin



When you buy equipment

STANDARDIZE

GAR WOOD 758 EXCAVATORS give you the capacity you need, the easy convertibility you want to handle a wide range of jobs. Available on crawlers or as highly mobile 20-ton truck crane. Both units are fully convertible with a complete line of ¾ yard attachments.

GAR WOOD - ST. PAUL DUMP BODIES, matched with Strong-Arm hydraulic hoists, deliver the payloads you need at a lower net cost per payload hour. The line includes standard-duty, heavy-duty, extra-heavy-duty and telescopic models.

GAR WOOD TRACTOR EQUIPMENT reflects many years of construction machinery engineering experience. Gar Wood's line for Euclid includes a Tipdozer, Dozecaster, revolutionary new ripper and both hydraulic and cable control units.

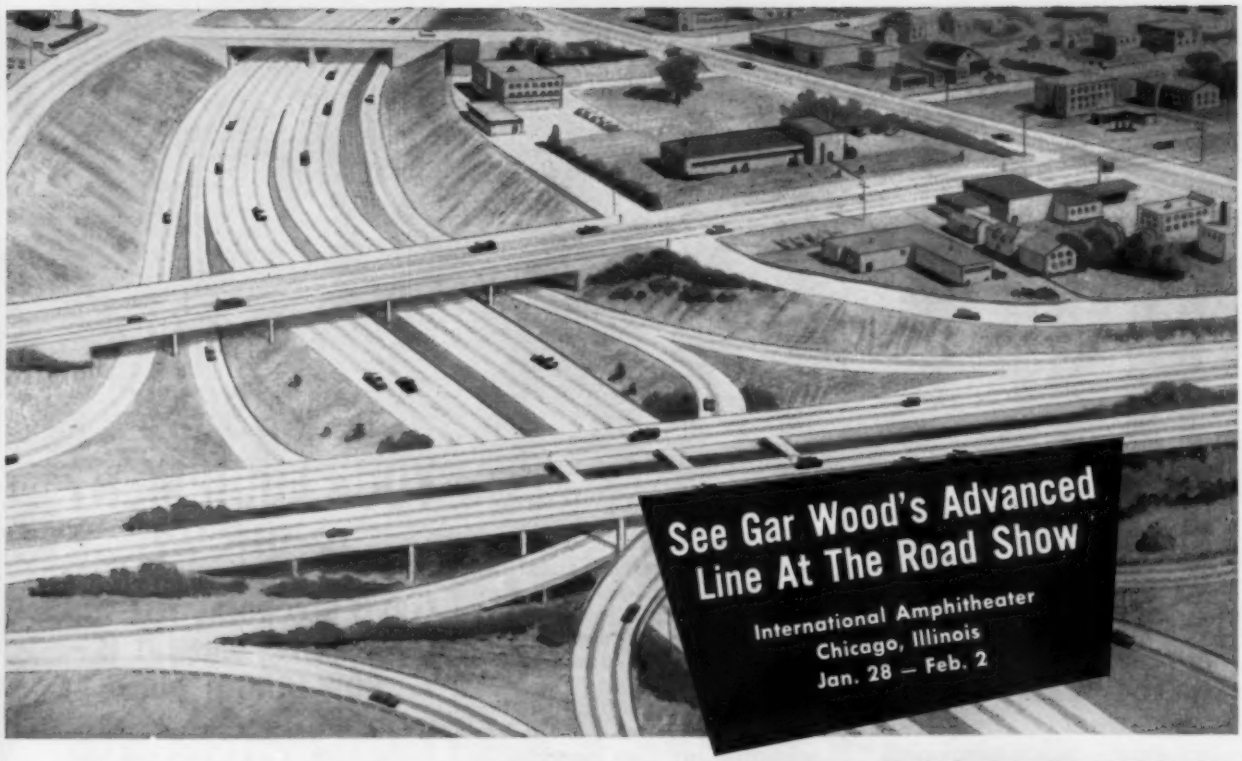
GAR WOOD - BUCKEYE SPREADERS give you the speed you want, the accuracy you need to distribute materials at lowest cost. Hitching is fast, safe and automatic. Flow is accurately regulated for uniform or tapered spread.

GAR WOOD INDUSTRIES,

PLANTS IN WAYNE AND YPSILANTI, MICH.;

for the road ahead,

ON GAR WOOD AND SAVE!



GAR WOOD-BUCKEYE FINEGRADERS can contribute to bigger paving profits. They are easily operated by one man . . . can produce up to 420 feet of 24-foot grade per hour exactly to specifications.

GAR WOOD-BUCKEYE'S HI-WAY WIDENER digs up to a mile of clean, graded trench per day. It is the only low-cost, one-pass method of excavating and subgrading along the shoulder on highway-widening jobs.

GAR WOOD-BUCKEYE DITCHERS have been digging "more ditch per dollar" for more than 60 years. You'll find today's most advanced ladder- and wheel-type models in the complete Buckeye line.

INC. Wayne, Michigan

FINDLAY, OHIO; MATTOON, Ill.; RICHMOND, CALIF.

VIBRATING TABLES

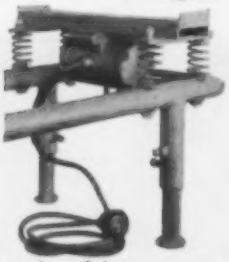
Designed and engineered for concrete products manufacturing

Air operated vibrating tables

Electrically operated vibrating tables

Tables designed for conveyor line operation

Table components for self assembly



Our business is solving your settling and vibration problems. Write for complete engineering data and literature.

2710 Clinton Avenue • Cleveland 13, Ohio

Manufacturers' News

(*From page* 262)

Emphasizing Chicago's importance as the trucking center of the nation, Fruehauf Trailer Company, Detroit, Michigan, has announced that C. Lawrence Schneider, executive vice-president in charge of fleet sales, has moved his office from Detroit to the Fruehauf offices at 2553 Archer Avenue (Chicago).

Mr. Schneider, who joined Fruehauf in 1920, is well known in Chicagoland business circles, having seved in this city as Fruehauf's branch manager and later, as regional vice-president. Fruehauf now maintains two locations in Chicago —a new sales and service branch at 5330 West 47th Street and the fleet sales offices on Archer Avenue.

C. L. Schneider

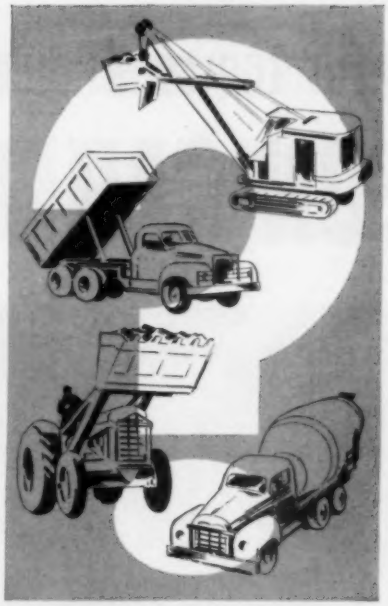
R. K. Yancey

The J. B. Ehrsam & Sons Mfg. Company, Enterprise, Kansas, has announced the appointment of Robert K. Yancey as sales representative in charge of the newly established west coast office at Riverside, Calif.

Mr. Yancey began his association with Ehrsams in 1945 and has both engineering and sales experience in the many phases of this 84-year old company.

Other branch offices are located in Kansas City, Kansas with Emmett D. Benham in charge; Denver, Colorado with John R. Ehrsam in charge; and Ft. Worth, Texas, with Larry Pittman in charge.

Robert J. Stoddard, executive vice-president of American Hoist and Derrick Company of St. Paul, Minn., has announced that the firm has expanded its operations to the West Coast. A totally owned new corporation, American Hoist Pacific Company, has been formed with headquarters in Seattle, Wash. The new firm will primarily produce special custom-engineered heavy materials handling equipment that is not normally offered by American Hoist. This special equipment in many instances will incorporate certain component parts and assembles now used in American Hoist products.



DO YOU KNOW OR ASSUME YOUR EQUIPMENT IS BUSY?

SERVIS RECORDERS TELL YOU AT A GLANCE WHEN IT IS— HOW LONG IT'S IDLE

For every piece of equipment that moves during work, trucks, front-end loaders, ready-mixers, graders, etc., bolt on a tamperproof Servis Recorder and it will accurately chart busy time and all stops or delays.

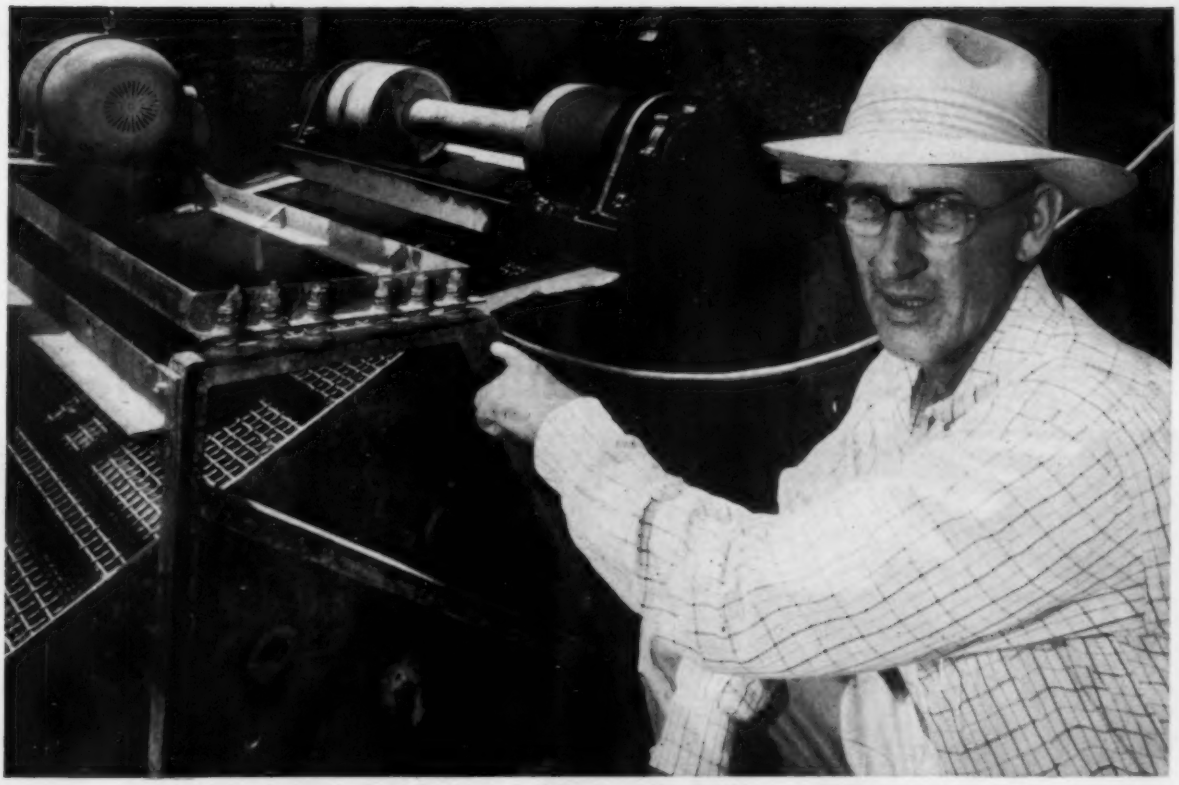
It writes its own permanent record for daily, weekly or for 3 day periods.

You can put your finger on costly delays or overtime and determine the cause from this unquestioned record.

Proven by over-the-highway haulers and industry for 46 years, low-cost Servis Recorders are ready now to help you increase productivity and profits.

Ask for the name and address of Mr. S-R, our nearest qualified representative, for help on your problems or write for our new "Off-the-Highway Bulletin"

THE SERVICE RECORDER COMPANY
1013-X Rockwell Ave. • Cleveland 14, Ohio



Superintendent A. E. Cline, Columbus Gravel Company, reports . . .

"SUPER-TEMPERED SCREENS Have Cut Our Screen Replacement Costs By 15 to 20%"

Using a 5′ x 10′ two-deck Deister Vibrating Machine, the Columbus Gravel Company, Columbus, Mississippi, produces about a quarter of a million yards of #4 to 1½″ gravel per year.

This machine is equipped with Wissco Super-Tempered Precision Space Screens, according to Supt. A. E. Cline, "because Columbus Gravel is interested in long screen life *and* accuracy.

"Super-Tempered Screens have certainly proved that they give longer resistance to abrasion, vibration and fatigue," Mr. Cline continues. "In addition, they are easy to change and do not work loose under severe vibrating conditions."

The importance of proper grading at Columbus Gravel is emphasized by the fact that the state highway department makes daily plant inspections to check grading accuracy. "With our Super-Tempered Screens, we never have any trouble meeting these requirements," Mr. Cline reports.

The reason for the long life and amazing accuracy of Super-Tempered Precision Space Screens is simple. It's quality—quality that's built into them at every step. Special wire is oil-quenched for extreme hardness. It's then crimped to precision standards and woven extra tightly on heavy-duty hydraulic looms to assure accurate, uniform spacing under the severest vibration.

Find out how you can use Super-Tempered Precision Space Screens to best advantage in your own operation. Write or phone our nearest sales office today.

CF&I SPACE SCREENS

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte Casper • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita

WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans New York • Philadelphia

CF&I OFFICES IN CANADA: Montreal • Toronto • **CANADIAN REPRESENTATIVES AT:** Calgary Edmonton • Vancouver • Winnipeg

4534

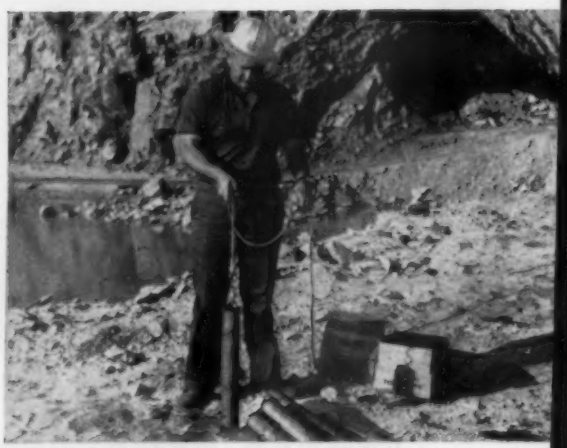
***NO** EXPLOSIVE CAN MATCH IT FOR ENERGY!*

***NO** TAMPING, NO POLING REQUIRED!*

***NO** HEADACHES RESULT!*

New way to handle small-diameter holes— Du Pont Nitramex® No. 3

1 **Another shot coming up** at McLeansville, N. C., quarry of the Superior Stone Co. Workers have drilled vertical holes of 4½" dia. at intervals of about 12'. 21' face is solid granite, with 10' burden. Small-size holes and granite could make this a rugged job, but Superior has it well under control, with "Nitramex" No. 3 in holes.



2 **Lowering ¼"Nitramex" No. 3.** This small-diameter blasting agent packs the power of 60% ammonia gelatin—yet is insensitive to caps, bullets, friction and severe shock. Non-headache-producing—no poling required.

3 **Pouring Du Pont Pelletol No. 1** around charge to concentrate energy at bottom of hole. Pound for pound, this "'Nitramex'-Pelletol" combination delivers more knock-down power, more rock per foot than any conventional explosives on the market—and without tamping.

4 **About 11,000 tons** of granite come down. "Nitramex" No. 3 gives the breakage needed in tough work, wet or dry—with a water resistance that permits "day-before" loading in depths up to 25'. 2¼", 3" and 3½" diameters enable you to handle the hardest small-hole jobs.

WHETHER you shoot large holes or small—soft materials or tough ones—there's a Du Pont blasting agent to fit the job. And each offers handling, loading and safety advantages no conventional explosive can match. For complete information on each type, contact our representative or write: E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

DU PONT BLASTING AGENTS

Products of Du Pont Explosives Research

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

Link-Belt Company, Chicago, Ill., has announced the following changes in its district sales organization:

George A. Most, Jr., has been appointed district manager of the Boston, Mass. office. For the past four years he has been district manager of the Moline, Ill. office. He joined Link-Belt Company in 1937, serving seven years at the Philadlephia plant and eight years at the Pittsburgh district office before moving to Moline.

J. Charles Bullock has been appointed district manager at Moline, Ill., succeeding Mr. Most. Mr. Bullock has been district manager at Albany, N. Y. since 1948. He started his Link-Belt career in Indianapolis in 1935, serving at the company's two Indianapolis plants and at Atlanta before coming to Albany.

Gene A. Zwerner has been appointed district manager at Albany, N. Y. succeeding Mr. Bullock. Mr. Zwerner, formerly district manager at Washington, D. C., joined Link-Belt in 1946. He served at the Chicago Pershing Road plant and at the Moline and Detroit district offices and for four years was sales manager of Link-Belt Africa, Limited.

C. C. Wiley has been appointed district manager at Washington, D. C. succeeding Mr. Zwerner. For the past six years Mr. Wiley has been district manager at Baltimore. He started with Link-Belt in 1926 at the Philadelphia plant and served in the Pittsburgh office for 17 years prior to appointment in 1946 as district manager at Birmingham, Ala.

Paul Waldorf has been appointed district manager at Baltimore, Md. succeeding C. C. Wiley. For the past 11 years Mr. Waldorf has been a sales engineer in the Detroit office. He joined the company in 1929 and has served in Indianapolis, St. Louis, Pittsburgh, Chicago and Cleveland.

Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio, announces the appointment of Eastern Equipment Sales, Inc., with offices in Springfield, Mass. and West Haven, Conn., as distributor for LIMA shovels, cranes, draglines and pull shovels. The distributorship will cover the entire State of Connecticut and several counties in Massachusetts.

Expansion of the Chase Bag Company branch in Portland, Ore., has been announced. A new building covering approximately 25,000 sq. ft. is under construction on property adjoining the present Chase Bag plant at 2550 N. W. Nicolai Street in Portland, built in 1939.

The firm of M. K. Griggs Co., Inc., Houston, Tex., will serve as Texas representative of the Rust Engineering Company of Pittsburgh, Birmingham and Boston, it was announced.

As principals of the Houston firm, Mark K. Griggs, president, Burton W. Wallin, vice-president, and James H. Lyman, sales engineer, will be active in all phases of the Rust Engineering Company's diversified industrial sales operations. The area served by the Griggs Company on behalf of the engineering and construction firm will include the entire eastern half of Texas.

Herman Tachau of Santa Fe, N. M., an engineer with the New Mexico State Highway Department, received the First Award of $5,000 in the recent competition for ideas to accelerate the progress of arc welding sponsored by the James F. Lincoln Arc Welding Foundation of Cleveland, Ohio. The award was one of 20, totaling $20,000, made to men in 16 different states.

Mr. Tachau received the award for a complete and thorough outline of a plan to enable more engineers to design machines and structures for arc welding rather than some other metal joining method.

DEPENDABLE
MOBILE EQUIPMENT CARRIERS

DESIGNED AND BUILT
FOR PERFORMANCE

When materials must be double handled . . . . Mobile Equipment Carriers make the profits.

ANY LOAD
FROM
15 TO 50 TONS

Write for Bulletin

AVAILABLE TRUCK COMPANY · 2501 ELSTON AVE., CHICAGO

Get the Facts on

ATLAS
PORTABLE BELT CONVEYORS

Model 125 Heavy Duty Portable Belt Conveyor

Atlas conveyors will do the job faster... safer... and at lower maintenance cost for you.

Atlas modern designed units insure

- High capacity
- Smooth, quiet operation
- Long service life
- Low maintenance costs

Model 125 — 24" Belt Conveyor 60 feet long delivering gravel in the plant of Oscar Fortune Co. Kenney, Ill.

To: ATLAS CONVEYOR CO.
Clintonville, Wisconsin

Please send me folder on Model 125 Belt Conveyor

Name .....

Street .....

City, State .....

E. S. McCormick has been named general sales manager for the Buffalo-Springfield Roller Division of the Koehring Company, Milwaukee, Wisconsin. Buffalo-Springfield recently was merged into the Koehring organization. It is located in Springfield, Ohio.

Mr. McCormick's appointment will shift him from his present duties with the Koehring Company as special railroad sales representative. He was associated with Koehring Company in this capacity for several years after having previously been connected with other construction equipment manufacturers.

E. S. McCormick

S. H. Smith

Stuart H. Smith of S K F Industries, Inc., Philadelphia, Pennsylvania, has been elected by the board of directors to the office of vice-president in charge of sales. Previously he was general sales manager.

Mr. Smith, who has been associated with S K F in various sales capacities for 22 years, brings to his new position a broad background of experience in the marketing of anti-friction bearings.

After receiving his education he began his career with S K F as a sales representative in the Cincinnati district office in 1934. He was subsequently made assistant district manager of the Detroit district, remaining there five years, at which time he returned to Cincinnati as district sales manager.

In 1950 Mr. Smith moved to the company's headquarters offices in Philadelphia to assume the position of manager of industrial development. In January of the following year, he was appointed assistant sales manager. He was made sales manager in 1952 and, two years later, was promoted to general sales manager.

N. F. Adamson, vice-president-sales, of the Twin Disc Clutch Company, Racine, Wisc., has announced two appointments in the general sales department.

R. A. Harmon has been appointed manager-district sales, moving up from district sales supervisor. Connected with sales engineering since joining Twin Disc more than eight years ago, Mr. Harmon has served as field representative, eastern district sales engineer and as manager-dealer sales.

Paul J. Demet has been appointed dealer sales supervisor. His responsibilities include promoting products through authorized dealers; establishing dealers in the United States, Canada, Mexico and U. S. Possessions; training dealer personnel; warehouse stock scheduling; and processing of dealer orders.

The appointment of Frank S. Greenwald as plant manager of Stearns Magnetic Products, 635 South 28th Street, Milwaukee, Wisc., a Division of The Indiana Steel Products Company, Valparaiso, Ind., is announced.

In his new post, Mr. Greenwald has direct charge of the engineering and manufacturing operations at Stearns and is responsible for the over-all operations of the Division. Previously, Mr. Greenwald had been the director of engineering at Indiana Steel's Valparaiso plant.

Alfred J. Dickinson, vice-president in charge of purchasing since 1952, has been named assistant to the president of Virginia-Carolina Chemical Corp., Richmond, Va. He will continue as a vice-president.

At the same time, the appointment of Douglas W. Laird as manager of the purchasing department, which handles all buying for the corporation, was announced.

Robert R. Martin, a native of Richmond and a graduate of the University of Richmond who joined V-C in 1951, was named as an assistant manager of the purchasing department.

Ben F. Lease, president of Athey Products Corp., Chicago, Ill., announces the appointment of Harry S. Jones to the position of assistant sales manager in charge of domestic sales. For the past three years he was district representative in the North Central States for Athey.

Prior to his association with Athey, Mr. Jones was chief engineer for a manufacturer of diesel engine replacement parts and before that operated his own company which was engaged in various construction and machinery projects.

Mr. Jones has a broad background in heavy equipment sales. He will be headquartered in Chicago and will devote much of his time to special assignments and field work.

HIGH-PRODUCTION ROCK HAULER

CAT* DW21-PR21 units climb stiff grades, make 600-yard round trips in 6½ minutes cycle time

This is one of two DW21 Tractors with Athey PR21 Rear Dump Trailers used by Newport Excavating Co. to haul from an open pit at Nanticoke, Pa. Shovel loaded, each unit handles an average load of 25 cubic yards of rock, pulls it up a 7½% grade out of the pit, and makes the 600-yard round-trip in 6½ minutes.

These big, tough haulers work steadily, 24 hours a day, five days a week. Their short turning radius and great maneuverability make them fast workers around the shovel and on the dump.

Perfectly matched to the rugged PR21, the new Caterpillar DW21 (Series C) develops high usable rimpull; its heavy-duty Turbocharged Cat Engine delivers 300 HP (maximum output). What's more, because of its four-cycle design, the engine gives you *dependable* power with a minimum of maintenance. No fuel adjustments are required. There are no cylinder ports or air boxes to clean. And low-cost No. 2 furnace oil can be used without fouling.

Among other features that boost production are: automotive-feel, hydraulic steering for easy, fast maneuvering and wide-section 29.5 x 29 tubeless tires for maximum flotation and sure-footed traction. Tubeless tires, pioneered in earthmoving use by Caterpillar, save tire down time and bring real cost savings over old-fashioned tubes and flaps.

For high, steady production you can't beat the DW21-PR21 in rock work. Your Caterpillar Dealer, who backs you with prompt service and parts you can trust, will glady give you complete details of its performance. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HEAVY-DUTY EQUIPMENT FOR THE HARD WORK

A number of changes in its general office management staff have been announced by Joseph T. Ryerson & Son, Inc., Chicago, Ill.

George E. Handtmann, formerly general office manager, is appointed assistant to the president, in charge of office operations for the 17 Ryerson steel service plants. Succeeding him is Vernon D. Rogers, who was assistant general office manager.

James E. Dittus, administrative assistant to the president, who has been responsible for coordinating the company's quality improvement activities, is appointed director of quality.

Appointed to the new post of manager of systems and procedures is Rolla R. Ross. George G. Moody is named to the new position of office manager for the general office. George H. Blank, formerly office and credit manager at the Ryerson Pittsburgh plant, is promoted to the post of assistant to the general office manager.

H. K. Porter Company, Inc., New York, N. Y., have announced plans to have constructed a seventeen-story office building at Sixth Avenue and Grant Street, Pittsburgh, Penn. The general offices of the Porter Company will occupy approximately six floors of the proposed building and the balance will be rented to other tenants.

THE KEY TO SUCCESSFUL SCREENING

ALL NEW IN DESIGN

WRITE FOR NEW BROCHURE

HANCO ELECTRIC SCREEN HEATERS

eliminate "blinding" and "clogging" of wire screens, thus making beating and brushing practices obsolete. Designed for heavy-duty service, HANCO Heaters with Quick Change Attachments are quickly installed and easily adapted to new or existing screen installations with such features as large capacity secondary terminal, a 16 step temperature changer, dust enclosure compact, exclusive overload protector.

EXCLUSIVE SCREEN TENSIONING DEVICE
(Replaces Existing Parts)

Fiberglass plate — insulates conductor from frame — eliminates draw bolt insulators.

Wedge-shaped conductor bars offers positive contact with cloth.

Representatives throughout the World.

Hanco

F. R. HANNON & SONS

1605 Waynesburg Rd. S.E., Canton 7, Ohio
ENGINEERS — Since 1926 — MANUFACTURERS

Opening of a new branch office in Indianapolis to be headquarters for regional operations in southern Indiana and western Kentucky is announced by the Thor Power Tool Company, Aurora, Ill.

Located at 1489 North Harding Street, the new Indianapolis branch will house complete sales and service facilities under the direction of Richard E. James, Jr.

A. C. Lundgren, president of Byers Machine, Inc., of Ravenna, Ohio, a wholly-owned subsidiary of The Thew Shovel Company of Lorain, Ohio, manufacturers of Lorain power shovels and cranes, announces that the board of directors of Byers has recently elected general manager W. W. Blauvelt to the position of vice-president and general manager of the company.

Mr. Blauvelt had served for 14 years with the Mergenthaler Linotype Company of Brooklyn before coming to Byers in 1953. He also is a member of the board of directors of Byers.

Vernon Bingham, former account executive for the public relations firm of Venn, Cole, and Price of Miami, Fla., has been appointed trade promotion coordinator for R. G. LeTourneau, Inc., of Longview, Texas.

In his new position, Mr. Bingham will coordinate the company's expanding industrial exhibits program, arranging trade show participation, developing appropriate display materials and sales aids.

Miles J. Furey, who has had a number of years experience as purchasing agent for industrial rubber goods manufacturers, has been appointed as sales representative for the Acme-Hamilton Rubber Mfg. Corp., Trenton, N. J., in Philadelphia and Bucks Counties. He also served for six years as senior buyer and supervisor of production and material control for General Motor's Ternstedt Division.

The announcement of a new P&H diesel distributor for a three-state area was made recently by the Diesel Engine Division, Harnischfeger Corporation, Crystal Lake, Ill.

Named as distributor is the Rental Service Company, 4605 North 4th St., Philadelphia, Penn. Headed by Jack Davies as president and sales manager, the new distributor is a division of Service Supply Corporation of Philadelphia.

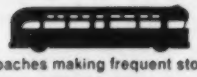
NEW !

the CLARK TransVerter

COMPACT UNIT "PACKAGE" OF

* Torque Converter
* Hydraulic Clutch
* Transmission

Trucks Operating on delivery schedules



Coaches making frequent stops

Refuse collection

Concrete mixers and similar industrial applications

Materials handling machinery

Many stationary power plants and oil field applications

Now comes more profitable performance for the operators of stop-and-go vehicles—trucks, both highway and off-the-highway, garbage and trash collectors, concrete mixers, materials handling machines and others: smoother, more economical handling made possible by Clark's new TransVerter.

- **No heavy clutching—reduces driver fatigue. Easy control of hydraulic clutch by shift lever button, floor button, or light pressure clutch pedal**
- **Fine inching control with accelerator**
- **Gear shifting reduced appreciably. Gear changes made quicker**
- **Closely spaced ratios add to ease of shifting resulting in added transmission life**
- **Starts smoothly, no stalling, no lugging**
- **Longer life for entire drive-train—no shock-loading**
- **Less wheel slip—Tires last longer**
- **Clutch adjustment eliminated—Result: savings on costly down time**
- **Excellent accessibility for easy service. Serviceable without special tools by any mechanic familiar with transmissions**
- **Available for OEM or field conversion**

Get the interesting story of these advantages whose economies far offset the moderate additional cost. Send for bulletin.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY, Transmission Division, Falahee Road, Jackson 21, Michigan
Please send the TransVerter Bulletin

NAME_____

COMPANY_____ POSITION_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

First step to successful blasting . . .

AUSTIN EXPLOSIVES

Each blasting operation has conditions which make it unique. These may be in the form of hardness of the rock to be shot, excessive moisture, fragmentation desired . . . or the amount of ventilation available if working in underground areas.

Austin produces an explosive to successfully meet every combination of conditions. Among its complete stocks are ammonia grades, ammonia gelatins, permissible dynamites, nitroglycerin and nitroglycerin gelatins.

AUSTIN AKREMITE

A popular item in the Austin line is Akremite. This combination of insensitive ammonium nitrate with carbon is safer . . . simpler to use . . . easier to store. Where applicable, it can cut blasting costs up to 50%.

There is an Austin explosives engineer in your area. He'll be glad to survey your job requirements and make common sense suggestions on how you can cut costs and increase production with Austin explosives.

AA-4481

USED IN 1833 AUSTIN & EVER SINCE

AUSTIN
POWDER COMPANY
CLEVELAND 13, OHIO

explosives ◆ permissible dynamites ◆ mine tools
detonating fuse and clips ◆ AP drill heads ◆ Akremite ◆ primers

Tommy C. Donovan has been named assistant general sales manager for the Kaiser Gypsum Company with headquarters at the company's Oakland, Calif. office.

Formerly assistant district sales manager for the company's southern California sales area, Mr. Donovan has been with Kaiser Gypsum since 1947, starting as an order clerk in the Beverly Hills office. He succeeds Robert A. Costa recently named vice-president and assistant general manager in charge of Kaiser Gypsum's newly acquired insulating board division.

G. A. Tamblyn, sales manager of The Frank G. Hough Co., Libertyville, Ill., has announced the appointment of Robert L. Knox and Herman R. Brown as assistant sales managers.

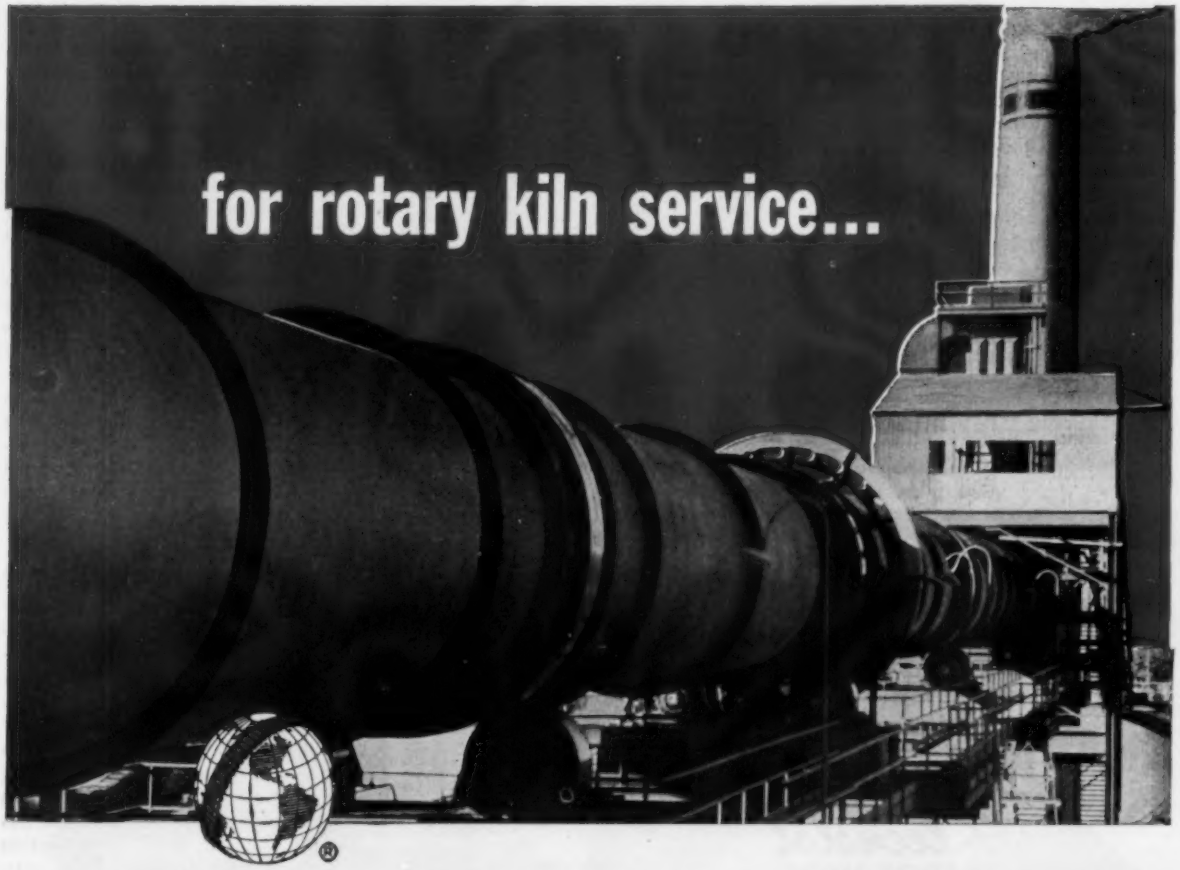
Mr. Knox who has been a district sales representative for The Frank G. Hough Co., will take charge of distributor sales and the contacts with field personnel. Mr. Brown, formerly manager of the order and distribution section of the sales department, will assume direction of manufacturers sales including export.

Autocar Division of The White Motor Company has turned out more than 4000 custom-built heavy duty trucks and tractors in its Exton, Pa., plant which was opened two and one-half years ago.

The 4000th Autocar, designed for the John Himmer Transfer Co., Neville Island, Pittsburgh, Pa., was custom-built, as are all the Autocars assembled at the big 56-acre plant.

A. A. Scholl, general manager of the Bagpak Division of International Paper Company, New York, N. Y., announces the opening of a new sales service office for the division in Camden, Arkansas. The Bagpak Division manufactures multiwall shipping sacks. The manager of the new office located at 121 Jefferson Street, S.W., will be T. A. McCord.

Announcement was made today of the acquisition by Link-Belt Company, Chicago, Ill., of the Detroit Power Screwdriver Company, manufacturer of power-driven screwdrivers and related automated assembly equipment widely used throughout industry. The announcement was made by Robert C. Becherer, Link-Belt president, and Roy W. Bailey, president of Detroit Power Screwdriver.



HARBISON-WALKER REFRACTORIES
of special merit—for every requirement

Select the best for each particular purpose from the full complement of types and classes of refractories which are especially suited for the various conditions involved in the many different rotary kiln operations.

Brands With Long Service Records

Basic Refractories for High Temperature Zones of Rotary Cement Kilns

MAGNECON—THERMAG—MAGNEX

Leading High-Alumina Brands

ALUSITE 70% Alumina
ANCHOR 60% Alumina
CORALITE 80% Alumina

LOTHERM—The high strength insulating brick specifically developed for use in the preheating zones of rotary cement kilns, provides durable insulating linings for direct exposure to the prevailing kiln conditions.

Various high duty and super-duty fireclay brick brands of superior quality are available from plants which afford lowest transportation costs—Pennsylvania—Missouri—Ohio—Alabama—Texas—Kentucky—Maryland.

—and the outstanding abrasion resistant refractories—DURO and WYLAM A.

—as well as all classes of Plastic Fire Brick, Castables, Mortars and Cements and Insulating Refractories.

HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES

World's Most Complete Refractories Service General Offices, Pittsburgh 22, Pennsylvania

Kansas Engine & Equipment Company, Inc., 2015 S. W. Boulevard, Wichita, Kansas, has been appointed to sell and service Michigan tractor shovels and excavator cranes, products of the Construction Machinery Division of Clark Equipment Company, Benton Harbor, Mich. They will handle all counties in Kansas except those east of, and including: Washington, Clay, Reary, Morris, Lyon, Greenwood, Elk and Chautauqua.

Victor Equipment Company, Alloy Rod and Metal Division, Norwalk, Calif., announces the appointment of G. E. Rogers as metallurgist.

For two years Mr. Rogers was superintendent of steel department, Pacific Commercial Co., Manila, P.I.; for five years with Coast Metals, Inc., during which time he assisted in development of a complete line of hardfacing alloys, and later opened a production plant in Canton, Ohio, and supervised manufacturing of these alloys. Later he was chief metallurgist for Stoody Company, Whittier, Calif.

The new Victor Equipment Company, Alloy Rod and Metal Division plant at Norwalk, Calif., represents approximately 40,000 sq. ft. of the most modern and up-to-date facilities for the manufacture of hardfacing rod and other products.

Mr. Belfit started his selling career with the Gummed Tape Division of Gilman Paper Company, of which Kraft Bag Corporation is a wholly owned subsidiary.

Ed Burgers, Jr., sales promotion mgr., has been appointed eastern sales manager of Kraft Bag. He was for several years sales representative in the St. Louis area before coming to the home office at 630 Fifth Avenue, New York. Mr. Burger's duties also include sale and promotion of the company's automatic open-mouth bag-filling machine—The Kraftpacker.

With the recent breaking of ground, the first phase of a two-year expansion and modernization program was initiated at the Wright-Manley facilities of the American Chain & Cable Company, Inc., York, Pa.

The first phase of the project is a new 20,000 square-foot receiving and raw stores building. Work on clearing the ground for this site has already begun with construction scheduled after the first of the year.

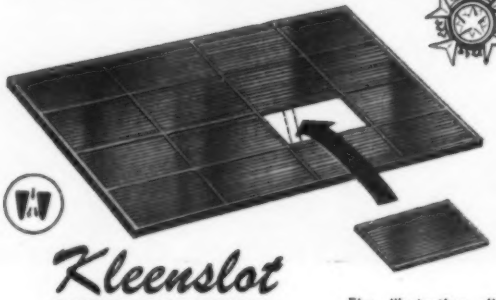
William J. Van Akin, vice-president of manufacture of The Ruberoid Co., New York, N. Y., has announced the appointment of Alfred M. Eberle as assistant to the general superintendent of the company's plant in Dallas, Texas.

Mr. Eberle, who lives in Dallas, joined Ruberoid in 1948 as plant engineer and was promoted to supervisor of maintenance and engineering at the Dallas plant in 1951.

Appointment of Sid T. Jordan, Whittier, Calif., as new southwest district manager for Rankin Manufacturing Co., Alhambra, Calif., makers of Ranite hardsurfacing welding materials, has been announced. His territory will include most of California, New Mexico, Arizona, Colorado, south portion of Utah and El Paso, Tex.

A veteran of the welding industry since 1925, Mr. Jordan has had wide experience in hardsurfacing during the past seven years. During this time he operated hardsurfacing shops and did field servicing work, including hardsurfacing of construction equipment.

For Distinguished Service



Kleenslot
WEDGE WIRE
PREPARATION SCREENS

On October 6, 1952 these Wedge Wire panels, as shown, were installed on a 6 x 16 Allis Chalmers low head vibrator. On April 30, 1955, after 7,836 hours of service they had processed 1,175,400 tons of 5" x 3/8" coal, 1.36 float material. These screens are still in service and are proof positive of the long life of KLEENSLOT Wedge Wire Screens.

The illustration directly above shows the location of the test screen that was removed for checking. The dotted lines on the diagram show the point where the rinse water from two different rinse boxes hit the screens. Send for our completely illustrated catalog today.

Wedge-Wire
CORPORATION
GAS STREET AT NICKLE PLATE R. R., WELLINGTON, OHIO

FOR THE CONTROL OF ROCK, ORES, ETC.
TO CRUSHERS, CONVEYORS, ETC.

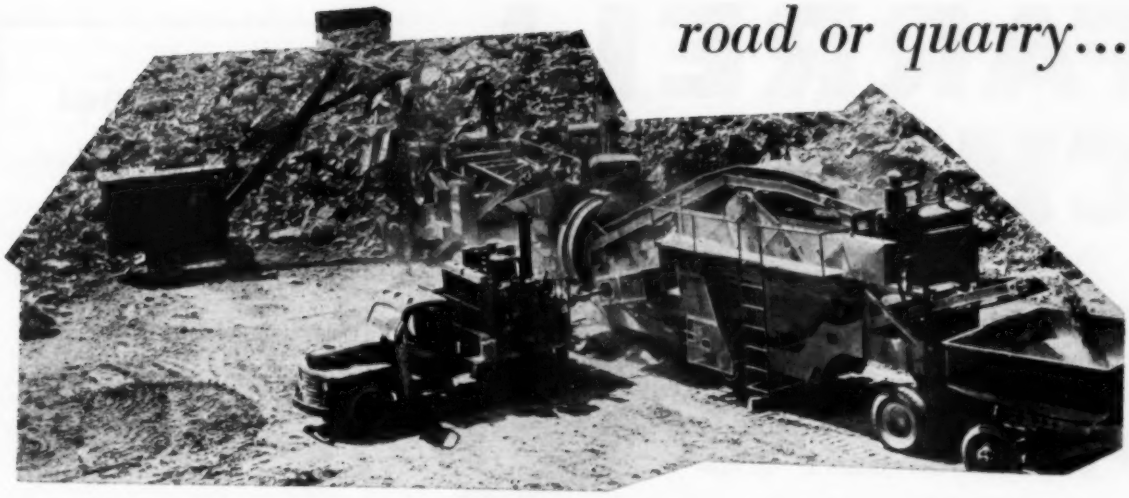
ROSS CHAIN FEEDERS
ROSS DROP-BAR GRIZZLY FEEDERS

ROSS SCREEN & FEEDER CO.
100 Quimby Street
WESTFIELD, N. J.

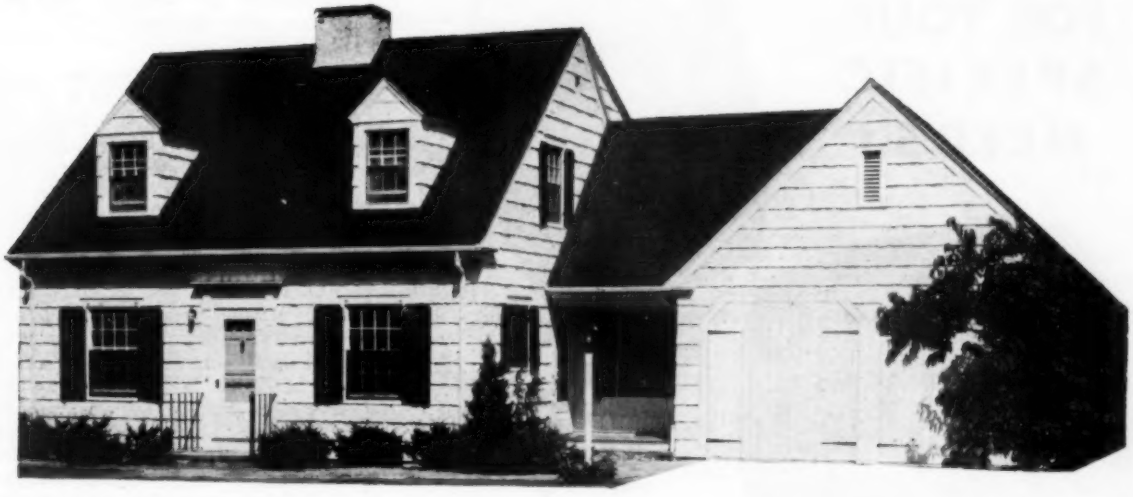
ROSS ENGINEERS LTD.
11 Walpole Road
SURBITON, SURREY, ENGLAND

CANADIAN LICENSEE: **DORR-OLIVER-LONG LTD.** ORILLIA, ONT.

road or quarry...



GOOD COMMUNITY RELATIONS



... because of "good-will" methods and techniques in blasting

Modern blasting presents many problems to the roadbuilder and quarry operator. In addition to doing the job efficiently, he must take the utmost care and consideration to avoid disrupting the business and family life of the community.

To help you increase your standing as a good neighbor and build your professional prestige in the communities where you operate, American Cyanamid Company's engineers have developed blasting procedures that we call "Good-Will" techniques. These techniques can help you reduce noise, vibration and shock to a minimum. At the same time, they enable you to obtain maximum blasting efficiency.

American Cyanamid's trained engineers will be glad to assist you in the selection and most efficient use of our high-grade blasting materials. Their skilled advice and knowledge of all types of blasting are among the many services Cyanamid provides for its customers.

We can give you quick delivery, direct to your location, from our conveniently located plants and magazines. We are always ready to assist you with your unusual blasting problems.

THE AMERICAN CYANAMID LINE:

High Explosives	Electric Blasting Caps
Permissibles	Instantaneous
Blasting Powder	Regular Delay
Blasting Caps	Split-Second Delay

Blasting Accessories

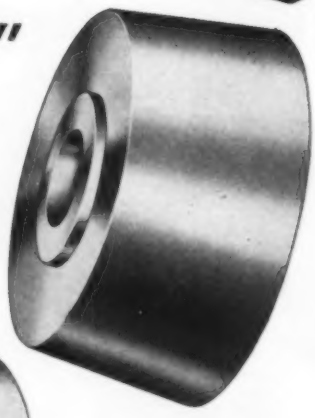
CYANAMID

AMERICAN CYANAMID COMPANY
EXPLOSIVES DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

Sales Offices: New York City, Latrobe, Pa., Pottsville, Pa., Scranton, Pa., St. Louis, Mo., Bluefield, W. Va.

FARRELL-CHEEK *Special* ROLLERS

"TAILOR-MADE" FOR YOUR SPECIFIC NEEDS!



85 F-C

Cast and machined from Farrell's "85" and Hard Edge alloy steels and carbon steels for high resistance to shock, stress, abrasion, wear . . . as required.

Write today for detailed information about Farrell-Cheek Special Rollers and all types of wheels.

FARRELL-CHEEK STEEL CO.

HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS

F-C HARD EDGE STEEL CASTINGS

F85 STEEL CASTINGS

RAILROAD CASTINGS Locomotive and Car R. R. Specialty Castings

ELEVATOR, CONVEYOR PARTS Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers, Bushings.

GEARS AND PINIONS "True Tooth" Gears and Pinions, Sheaves and Wheels.

CRANE WHEELS Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

STOKER PARTS Feed Screws, Furnace Tools, Flanged Pipe, etc.

HEAVY HARDWARE Complete Line Wire Rope Fittings and Cutters, Bar Benders and Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO

Obituaries

ROBERT M. REINDOLLAR, immediate past president of the American Road Builders' Association, died after several months of illness at the age of 62.

Mr. Reindollar, former chairman of the Maryland State Roads Commission, was widely known for his views favoring a national highway program. He led the battle for better highays during his A.R.B.A. presidency in 1953 and 1954, and was one of the first to advocate a $50,000,000,000 roadbuilding program in appearances before the Clay Committee at the White House, various Committees of Congress, and numerous other groups.

ROBERT H. HODGSON SR., vice-president of the City Sand & Gravel Company and president-treasurer of the Capital City Asphalt Company, died recently in Montgomery, Ala. Mr. Hodgson was also owner and president of the Hodgson Concrete Company.

G. F. EHRLINGER, secretary-treasurer of the Janesville Sand and Gravel Company, Janesville, Wis., died on November 10, 1956, at the age of 72. He had been hospitalized several days previously after a heart attack. Mr. Ehrlinger had been associated with Janesville Sand and Gravel since 1909, when he assumed the position he held until his death.

MAURICE A. KNIGHT, founder and president since 1919 of the Rubber City Sand & Gravel Company, Akron, Ohio, died recently.

HOWARD F. KICHLINE, director of research and chief chemist for the North American Cement Corporation, died recently at the age of 65. Mr. Kichline, who came to the Catskill plant in 1915 as a junior chemist, later becoming plant chemist and then director of operations for the company's three plants, was to have retired this month.

CARL F. SPRUNG, 51, vice-president and secretary of Rock Asphalt Inc., died recently at Buffalo, N.Y. He had been with the firm for 20 years, having joined its staff when it was known as the Brayer Brothers Company.

Power for Potash

(*From page* 201)

mosphere and are continually subjected to the highly corrosive effects of potash ore and moisture.

After refining, the final product is filtered in a centrifuge and then dried in large kilns before being placed in storage or directly prepared for shipment. A large portion of the production is shipped in bulk, either in covered hopper cars or boxcars; the remainder is bagged.

Throughout the mill processes, certain major concentrations of electrical load are best served by control centers. These control centers group all of the industrial magnetic controllers in one location, each in an individual metal cubicle for easy access and ready interconnection. Controllers are of the full-voltage or reduced-voltage type and incorporate disconnect switches or air circuit breakers, as desired.

Lighting distribution panelboards can also be included in control centers. The drives are controlled from pushbuttons on the doors of individual compartments, assembled at a centralized control desk, or located at each drive. With much of the interconnecting and main wiring done at the factory, and terminals available for the interconnecting wiring to the drives themselves, control centers materially reduce installation cost and time and, after installation, promote better and more economical maintenance.

With such a large system of electrical drives and with processes so dependent upon electrical equipment for continuity of operation, operating companies have established effective preventive-maintenance programs. Such efforts incorporate regularly scheduled checks of all equipment, maintenance of adequate records, and an adequate supply of spare parts. Thus from the utility substation to the storeroom, the electrical supply and drive systems are safeguarded in every feasible way to provide the utmost in safety, flexibility, and continuity of service, so that electrical energy assists in producing potash 8,760 hours each year.

New and larger facilities will be added to the Oro Grande, Calif., plant of the Riverside Cement Company, as the result of an expansion program which will be completed in June, 1957. The new $3,500,000 facility is designed to increase the present capacity to meet the growing demands in the area.

Industry Personalities

A. W. Wood, president and one of the founders of the Lorain Slag Company, has been named president of the National Slag Association. Mr. Wood is also general manager of the Cleveland Slag Company.

Hal G. Knight was appointed president of The Rubber City Sand & Gravel Company, Akron, Ohio, at a recent directors meeting. Richard C. Wetsel was named vice-president.

R. L. Freeman

Robert L. Freeman has been named to head the newly-formed Advertising and Promotion Department of the Huron Portland Cement Company, according to an announcement made by C. L. Laude, vice-president in charge of sales.

Mr. Freeman was formerly technical service engineer. He assumed his new duties on October 1.

Royden E. Dygert was named pre-fabricator sales manager of the National Gypsum Company, New York, N. Y. Mr. Dygert has been associated with National Gypsum since 1949.

James C. Reilly has been appointed manager of industrial relations for the Permanente Cement Company, Oakland, Calif., and its wholly-owned subsidiary, the Kaiser Gypsum Company, Inc.

Harry G. Smith was named labor relations representative for Permanente's new southern California plant and for a second new plant planned for New Mexico. In addition to his new responsibilities, Mr. Smith will continue to serve as labor relations representative for the cement plant at Permanente and for the Permanente-Salina area plants of Kaiser Aluminum and Chemical Corp.

Leonard R. Flicker was appointed co-ordinator of safety for all Permanente Cement and Kaiser Gypsum facilities.

James W. Sanders, president of Sanders' Industries, Inc., of Jackson, Miss., has been elected treasurer and member of the board of directors of the newly-formed Mississippi Valley Portland Cement Company.

Warren E. Brown, formerly assistant manager of the Ideal Cement Company's Baton Rouge, La., plant, was recently promoted to superintendent of the San Juan Bautista, Calif., plant. Mr. Brown has been with Ideal for eight years.

Officials of the United States Gypsum Company, Chicago, have announced several recent appointments.

Wallace R. Weidman was appointed central division sales manager of U.S. Gypsum. He succeeds R. M. Beckler, who has retired.

Richard G. Sanders, named Lakeland district manager, will have his headquarters in Chicago.

Roy R. McClayton, formerly commodity advertising manager, has been promoted to the position of advertising service manager.

John K. Wise is now manager of U.S. Gypsum's patent department. Mr. Wise, who succeeds G. K. Roos, will work in the Chicago offices.

Tommy C. Donovan has been named assistant general sales manager for the Kaiser Gypsum Company, Oakland, Calif. Mr. Donovan, formerly assistant district sales manager for the company's southern California sales area, has been with Kaiser Gypsum since 1947.

John P. Holt has been appointed executive assistant to Harvey N. Barrett, Jr., vice-president-sales of Basic Incorporated, Cleveland, Ohio. Mr. Holt has been manager of Basic's St. Louis office since 1953.

Charles J. Tyson, Jr., was appointed to Basic's sales and service staff in Philadelphia.

the BUCYRUS ERIE 30-B

. . . sets new performance standard in the 1-yd. class

Here's a brand new 1-yd. profit-maker for you — the Bucyrus-Erie **30-B**. Offered with either crawler or rubber-tired carrier mounting, it's readily convertible to various front ends — shovel, dragshovel, dragline, crane, or clamshell.

New . . . fast . . . quality-built, the **30-B** is just what you need in a 1-yd. machine to speed stripping and loading operations. Check the brief rundown of features given below; then request full details.

Matched to your needs

- Your choice of diesel, gasoline, or single-motor electric power. Direct or torque converter drive.
- Five easily-converted front ends — shovel, dragshovel, crane, dragline and clamshell.
- Your choice of five crawler mountings *plus* Transit Crane on rubber-tired carrier.
- Extra equipment for special jobs — independent propel, third drum unit, and cathead.

Designed to out-perform

- Easy, air control for smooth, big-output working cycles.
- Easy to service — automatic lubrication of many parts.
- Large, cool-running clutches and brakes.

Built to outlast

- Six conical hook rollers distribute loads evenly between upper and lower works to save wear.
- Five main operating clutches are alike, with parts interchangeable.
- Specially-processed steels add strength and wear resistance.
- Strong, rigid cast revolving frame withstands twisting and bending stresses, maintains machinery alignment.

199E56C-a

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen: Please send me details on the new 30-B.

Name _____

Organization _____

Address _____

City _____ State _____

199E56C-a

Send for complete facts NOW!

EMRYS L. WILLIAMS has been appointed district manager for the Zonolite Company, Chicago, miner and manufacturer of vermiculite. He will have charge of the firm's sales activities in Michigan and northern Ohio. Zonolite's principal products include insulation, lightweight aggregates used in plaster and concrete, and acoustical material.

Mr. Williams joined Zonolite in 1950 and has served as architectural representative in Cleveland and Detroit.

KENNETH A. ORETGREN, ROBERT ASHER, and GUILES E. MAXWELL, JR. have joined the sales force of the Zonolite Company, Chicago, Ill.

Mr. Oretgren will contact architects, dealers, contractors, and industrial firms in the southern Illinois territory. Mr. Asher will serve in the Central Missouri territory. Mr. Maxwell will represent the firm in the Birmingham, Ala, area.

THOMAS E. HEARON has been named St. Louis district sales manager for the Zonolite Company, Chicago, Ill. The district covers Missouri and portions of Illinois, Kentucky, and Tennessee.

Mr. Hearon, who joined the firm in 1953, has served as sales engineer in St. Louis and in Shreveport, La., contacting architects, engineers, builders, plastering, contractors, and dealers. He was formerly a construction engineer for the Mississippi State Highway Department.

WILLIAM D. PRITCHARD has been promoted to the position of chief chemist at the Fordwick, Va., plant of the Lehigh Portland Cement Company. Mr. Pritchard has been with the company for 10 years.

ROBERT G. VERVAEKE has been appointed general manager in charge of operations for the Chemical Lime Company of Oregon, Baker, Oreg. He had previously been associated with the United States Gypsum Company in various executive capacities, and also with Gladding McBean & Company at Ione, Calif.

GEORGE H. RIEHL has resigned as vice-president and treasurer of the Portsmouth Cement & Lime Company. Mr. Riehl was associated with the company for 35 years.

WILLIAM W. BURNHAM has been promoted to assistant sales manager, Philadelphia sales territory, of the Universal Atlas Cement Company.

MEET SIZING SPECS

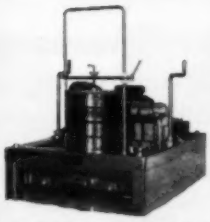
1. The GILSON Testing Screen is the standard sizing control of the industry. Engineers specify it. Contractors use it to check aggregates at the job site.

2. Progressive producers have been using the GILSON Screen for fifteen years. It's fast and accurate. It takes a beating, stays fast and accurate after years of hard, continuous use.

3. What about you? Are you going to get your share of the $33-billion highway program? With the GILSON Testing Screen you'll meet sizing specifications with minimum time, labor, and cost.

4. The GILSON Screen makes two to seven separations simultaneously — 4-inch to 200-mesh — in five minutes or less per complete test. Field reports show that a GILSON Screen purchased now will serve you at least ten years under the most severe operating conditions, and with practically no maintenance.

5. Write for complete information. Do it now.



A sand attachment for handling 8-inch sieves is optional with the GILSON Screen.

GILSON SCREEN CO.

MALINTA, OHIO

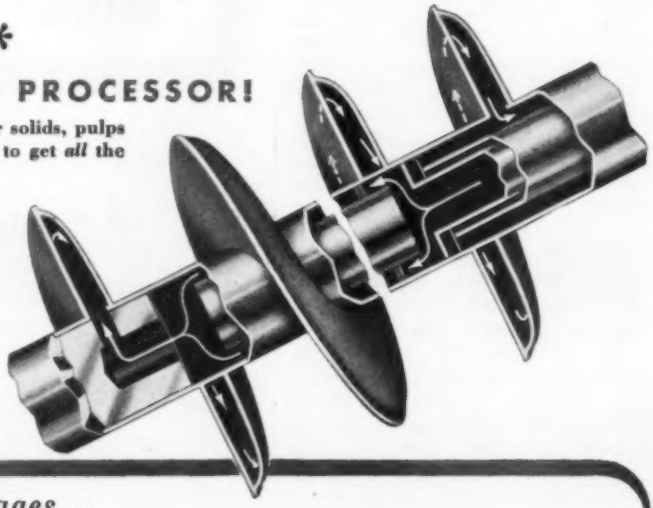
if you have a Cooling...Heating...or Drying problem

investigate the revolutionary advantages of...

THE holo-flite* PROCESSOR!

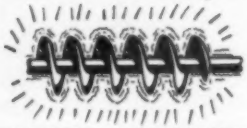
If you have processes where slurries, granular solids, pulps or pastes are cooled, heated or dried, be sure to get *all* the facts on HOLO-FLITE advantages.

HOLO-FLITE handles such processes — *in continuous flow* — in as little as 1/5th the space of other types of heat exchangers. What's more, it is readily adaptable to a wide range of applications — is simple to install and maintain — and provides many other important savings.

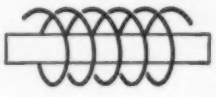


typical HOLO-FLITE *advantages...*

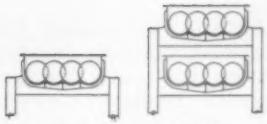
ITS APPLICATION FLEXIBILITY is almost unlimited. It cools, heats, or dries. It handles granular solids, pulps, pastes, slurries and fluids with equal ease. Its heat transfer agent can be water, refrigerant, hot oil, Dowtherm, steam or other liquids or vapors at any of a wide range of temperatures. It cools materials in ranges from 1800°F to 0°F. It heats and dries with hot oil to 600°F...with Dowtherm to 750°F...with steam to 150 lbs. per sq. in. pressure.



THE LARGE HEAT-TRANSFER SURFACE saves space — HOLO-FLITE requires as little as 1/5th the space of other heat-exchange equipment of comparable capacity. Moreover, a more complete heat transfer is effected, resulting in more uniform processing.



ROTATION IS SLOW — granular and powdered solids are handled with practically no dusting — negligible abrasion. There are no dust recovery problems — a further saving in installation, maintenance and operating costs!



ITS OPERATING CAPACITY is readily adaptable to virtually any requirements by simply varying the diameter, pitch, and length of flights, as well as the number of "tiers." Multi-tier units require no more floor space than single-tier installations!

Send for a Free 8 Page Bulletin which gives further time, space and money-saving details on Holo-Flite installation and operating advantages!

*T.M. Reg. (HOLO-FLITE)

HOW HOLO-FLITE WORKS...

Basically the HOLO-FLITE consists of one or more flights of hollow-bladed screw conveyors. The product to be processed moves through a trough housing the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums — *as the product is continuously moved along in a bulk-flow without interruptions!*

There are many money and time-saving applications for the Holo-Flite wherever products are cooled, dried, heated or even calcined. Let our engineers study your *particular* problem and make helpful recommendations. No obligation, of course!

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Reverse-Jet Filters*
HOLO-FLITE Processors

Western Precipitation Corporation

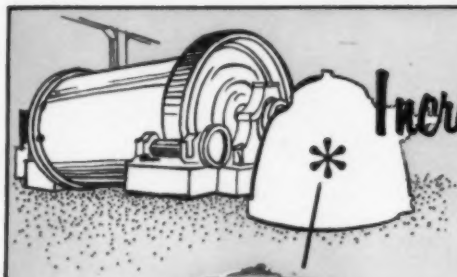
Designers and Manufacturers of Equipment for Collection of Suspended Material from Gases ..and Equipment for the Process Industries

Main Offices: **1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA**

Chrysler Building, New York 17 • 1 North La Salle Street Building, Chicago 2 • Oliver Building, Pittsburgh 22 • 3252 Peachtree Road N. E., Atlanta 5 • Hobart Building, San Francisco 4

Precipitation Company of Canada Ltd., Dominion Square Building, Montreal

Representatives in all principal cities



Increased CEMENT PRODUCTION
BRADLEY HERCULES MILLS

* *as a preliminary pulverizer for compartment or tube mills.*

The quickest, most economical way to increase your grinding capacity

For the cement manufacturer with excess kiln capacity . . . here is the answer to INCREASED CAPACITIES at an appreciable SAVING IN HORSEPOWER. The Bradley Hercules Mill, used as a preliminary pulverizer, before compartment mills or tube mills, results in INCREASED PRODUCTION of finished material at a LOWER COST per barrel.

Rugged, dustless construction, maximum accessibility keep maintenance costs at an absolute minimum.

Automatic electrical feed control eliminates manual operation.

For complete information, write for Catalog No. 57

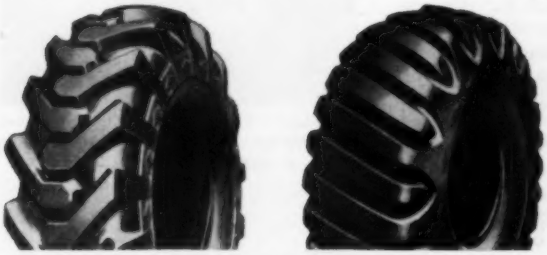
Bradley PULVERIZER CO.

LONDON **ALLENTOWN, PENNA.** BOSTON

Carolina BIG TIRE Specialists

Earth Mover Tire Recapping Service CUTS COSTS PER MILE AND PER TON

WE GO ANYWHERE, ANYTIME, for Site Service, Pickup and Delivery



CAROLINA expert performing on-the-job service. A new tire for an earthmover may cost nearly $4000. YOU can cut this in half by using CAROLINA tested-and-proved methods. We specialize in servicing these tires for contractors, quarry and strip mine operations.
CAROLINA maintains more than 2000 service dealers in 30 states and some foreign countries.

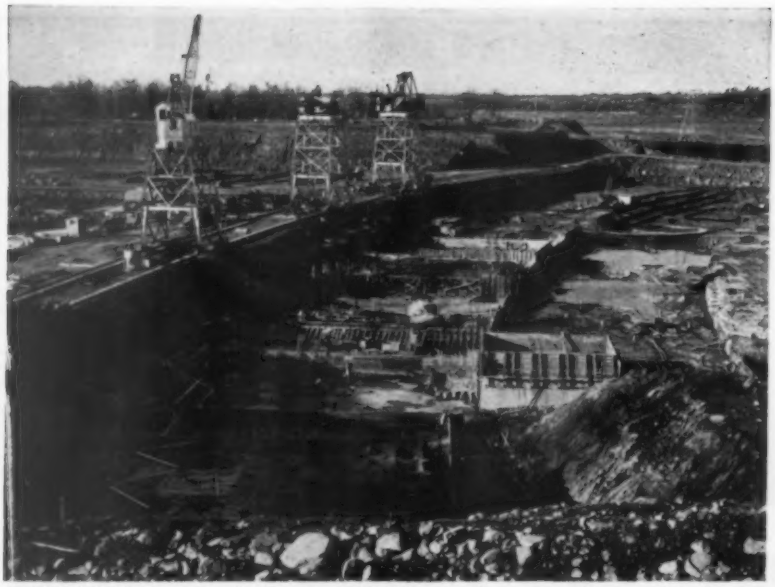
WHAT OUR CUSTOMERS SAY:

The W. E. Graham Construction Co. of Maryland writes: "CAROLINA saves us thousands of dollars a year on tires. Recapping and repairing saves 50% of new tire cost, and the recaps run just as long."

SEE YOU AT THE ARBA ROAD SHOW IN JANUARY. WE WILL BE AT BOOTHS 8 AND 9. DROP IN TO TALK WITH OUR TIRE SPECIALISTS.

Write for full details

CAROLINA TIRE COMPANY • 232 N. Main St., Salisbury, N.C.



FOUNDATION of Long Sault Dam where 700,000 yards of concrete will be poured by the contractor—Walsh, Perini, Morrison, Kiewit, Utah Companies, Massena, New York.

AGGREGATE TUNNEL CUTS COST OF VOLUME CONCRETE MIXING... ST. LAWRENCE SEAWAY PROJECT

Material handling is a major problem on projects such as the Long Sault Dam on the new St. Lawrence Seaway. Here is a job of such magnitude as to require more than 2400 cubic yards of concrete per day to keep the work rolling.

To handle the necessary aggregates, the contractor constructed, at some distance from the dam site, a tunnel within which a conveyor carries the aggregate to a batch concrete mixer. This tunnel, built right on the job with Commercial Shearing and Stamping steel liner plates, is large enough to accommodate the conveyor belt and walkway for feeder operators.

Placed at intervals in the tunnel roof are openings through which the aggregate flows by gravity from the stockpile directly overhead and which completely covers the tunnel. Feeders installed at intervals in the tunnel roof control the gravity flow of the aggregate from above.

Feeder operators working inside the tunnel control the material flow and selection of sizes to obtain the proper aggregate mixture reaching the conveyor. The belt carries the aggregate to the batch mixer for the addition of cement, water and mixing into concrete.

Commercial Shearing and Stamping liner plate was selected for this job because of its ability to withstand the most severe overhead loads, and to provide maximum protection from collapse and cave-in. In addition, the ease of constructing and disassembling Commercial liner plate tunnels make it possible to move or salvage the entire tunnel. This method of large scale aggregate handling, as done at the Long Sault Dam project, is being profitably used by contractors on other major projects.

Commercial Shearing and Stamping steel liner plate is available in a wide size and gauge range. For complete details on how Commercial can help solve your surface or sub-surface tunnel problems write to Dept. O-1, The Commercial Shearing and Stamping Company, Youngstown, Ohio.

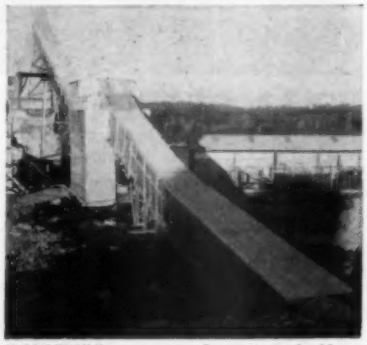
COMMERCIAL
shearing and stamping

YOUNGSTOWN, OHIO
CHICAGO, ILLINOIS
SALT LAKE CITY, UTAH

CONSTRUCTION of aggregate tunnel is quick and simple. Workmen install Commercial's liner plates on this concrete foundation in trench.

TUNNEL is completed. Unskilled workmen have used only 7 inside bolts to hold each plate. Note aggregate feeder openings.

AGGREGATE, stockpiled on top of tunnel, flows by gravity onto belt conveyor inside tunnel as operators open feeder gates.



CONVEYOR emerges from tunnel (foreground) and feeds aggregate into batch mixer for final processing into concrete. Trucks then haul concrete to dam site without time loss.

HOW AMERICAN CUT SHOE REPLACEMENT

Quarry operations really test a crane's crawler design. Yet, owners of American 300 Series Shovels and Cranes report years of tough operation without a single crawler shoe replacement! Here's why: American shoes, cast from special alloy steel, have heavy duty, double walled design. Four interlocking lugs distribute pin wearing forces over the whole track pin virtually eliminating the possibility of bending or breaking the pin.

EIGHT INTERLOCKING SHOE LUGS plus floating track pins reduce track wear and expense. The floating pins wear evenly, longer, because they're free to turn.

All rock for the 600 ton per day limestone production of the O'Fallon Quarry and Supply Company, located west of St. Louis, Mo., is easily supplied by one American 300 Series Shovel, shown above. The American actually prescreens the rock because any pieces too large for the bucket are too big for the crusher.

American 300 Series Shovels prove their outstanding durability in quarries across the country. Ask American owners about the performance of their machines—then check with your distributor for complete data on the American line in sizes from ½-yard up.

AMERICAN HOIST
and Derrick Company
St. Paul 1, Minnesota

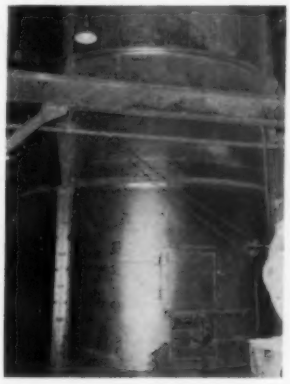
Quality with Economy

EHRSAM MFG. CO.

The Ehrsam line of Gypsum and Wallboard Processing equipment is designed and manufactured for economy and easy operation. Our Engineering Staff with many years of experience are always available for any problem which you may have.

The EHRSAM pin-type mixer with its three feed spouts deposits core on the paper ahead of the forming rolls.

An interior view of wallboard plant showing an Ehrsam 410-foot Board Line Conveyor to a drier.



An Ehrsam Gas Fired Kettle with a capacity of Calcining Raw Gypsum to finished plaster at the rate of 15 tons per 2½ hours.

The J. B. EHRSAM & SONS, MFG. CO. • Enterprise, Kansas

ADMIRO...for Peak Resistance to SHOCK, WEAR, ABRASION

YOU NEED ADMIRO Heat Treated High Tensile Alloy Steel to insure maximum service life for equipment subjected to hard usage. ADMIRO greatly reduces the effect of impact and abrasion. It cuts costly equipment down-time—shows record economies in repair and maintenance.

COMPLETE FABRICATING FACILITIES

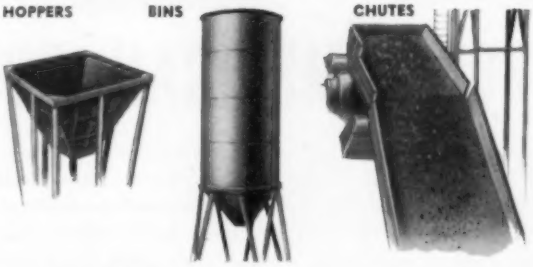
Welding — Rolling — Forming

Intricate Shapes Cut to Specification

Recommended Applications: Relining and repairing truck beds, crushers, buckets, wear liner plates, dirt and rock recovery equipment. Special uses in Mining, Quarrying, Cement and Aggregate Plants.

Write for Bulletin

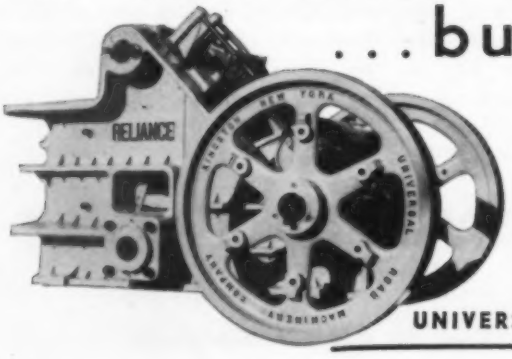
HOPPERS BINS CHUTES



ADMIRAL ALLOY STEEL CORP., 850 Euclid Ave., Cleveland 14, Ohio

ADMIRAL ALLOY STEEL CORP. of Texas, 2802 Rector St., Dallas 15, Texas

The "IRON HORSE" of HEAVY DUTY CRUSHERS ...built by RELIANCE



"It's a horse for work" . . . perfect description of this massive RELIANCE unit, with *built-in* life-time service. Greater weight gives more stability . . . results in minimum operating and upkeep costs. Designed with long jaw plates adjustable for all fineness ranges.

RELIANCE builds crushing, screening and washing plants from 50 to 1500 tons per day capacity.

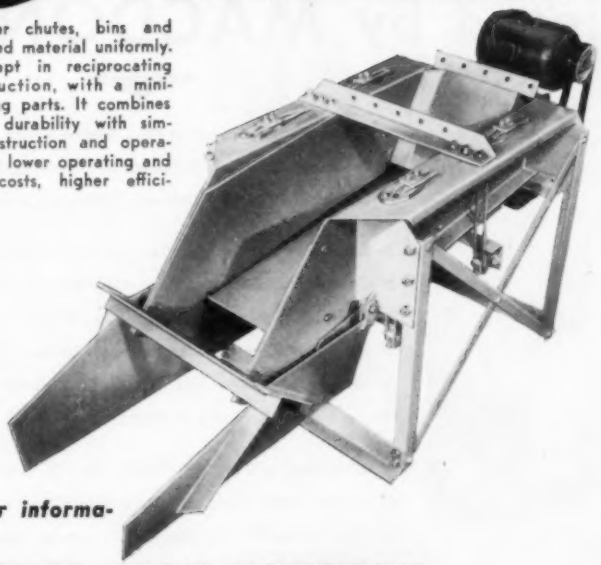
Write Today for Bulletin

UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.

NICO

RECIPROCATING PLATE FEEDER

For use under chutes, bins and hoppers to feed material uniformly. A new concept in reciprocating feeder construction, with a minimum of moving parts. It combines strength and durability with simplicity of construction and operation, to obtain lower operating and maintenance costs, higher efficiency.



For further information write

NATIONAL IRON COMPANY

DULUTH 7, MINNESOTA

The NICO Model 500-C

The NICO Model 500-C employs four doubled flexible steel cables to suspend the reciprocating plate, eliminating the most troublesome parts of ordinary feeders of this type. Cable bending permits the plate to swing freely with no binding or wearing.

- **No rollers to lubricate**
- **No rollers to wear**
- **No track to keep clean**
- **No rollers to replace**
- **No track to wear**
- **No rollers to stick**
- **No track to replace**

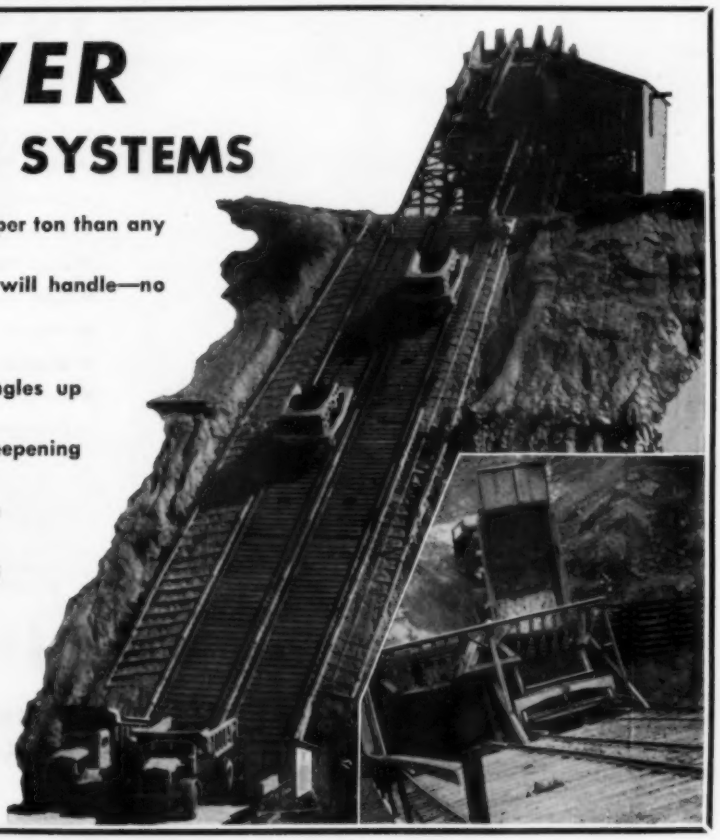
The Model 500-C cables do not need lubrication or cleaning. They cannot stick, and they last almost indefinitely. They are easily adjustable to change plate height, or angle of inclination of the plate when desired.

ROCKOVER

OPEN PIT SKIP SYSTEMS

- **Will elevate material at a lower cost per ton than any other system.**
- **Handle anything shovels and trucks will handle—no material too abrasive or blocky.**
- **Use only a few trucks in the pit.**
- **Track laid directly on pit wall at angles up to 45°.**
- **Simple extension of track follows deepening of pit.**
- **Load directly from trucks in pit. (See inset photo)**
- **Use multiple loading stations along trackway if desired.**

Skips of from 5 - 35 ton capacities available. Write for information.



NATIONAL IRON COMPANY

DULUTH 7, MINNESOTA

1956... "Roll Call" of Plant Expansion
Projects completed by MACDONALD

Bulk truck and car loading silos, Bessemer Limestone & Cement Co.

Interior of bulk truck loading silos.

For Design and Construction of your new plant or extensions, contact any of our offices.

- Alpha Portland Cement Co., Ironton, Ohio
- Bessemer Limestone & Cement Co., Bessemer, Pennsylvania
- Columbia Cement Division, Pittsburgh Plate Glass Co., Zanesville, Ohio
- Calaveras Cement Co., San Andreas, California
- California Portland Cement Co., Mojave, Calif.
- Halliburton Portland Cement Co., Corpus Christi, Texas
- Lone Star Cement Corp., Bonner Springs, Kansas
- Marquette Cement Mfg. Co., Cape Girardeau, Missouri
- Northwestern States Portland Cement Co., Mason City, Iowa
- Southwestern Portland Cement Co., Victorville, Calif.
- Southwestern Portland Cement Co., El Paso, Texas
- State Cement Plant, Rapid City, South Dakota
- Standard Lime & Stone Co., Martinsburg, West Virginia
- Universal Atlas Cement Co., Milwaukee, Wisconsin

1957 Projects to be completed by MACDONALD

- Alpha Portland Cement Co., Lime Kiln, Maryland
- Alpha Portland Cement Co., St. Louis, Missouri
- Alpha Portland Cement Co., Catskill, New York
- Carolina Giant Cement Co., Harleyville, South Carolina
- Diamond Portland Cement Co., Middle Branch, Ohio
- Ideal Cement Co., Redwood City, California
- Lake Ontario Portland Cement Co. Picton, Ontario
- Monarch Cement Co., Humboldt, Kansas
- Missouri Portland Cement Co., Sugar Creek, Missouri
- Ponce Cement Co., Fort Lauderdale, Florida
- Universal Atlas Cement Co., Leeds, Alabama

Year after year, the roster of MACDONALD clients resembles a "Who's Who" of leading cement producers.

This eminence in the world of industry stems from solid achievements in engineering and construction since 1894.

MACDONALD ENGINEERING CO.

2349 Yonge St.
Toronto, Canada

Construction Engineers
22 West Madison Street
Chicago

885 Bryant Street
San Francisco, California

For the manufacturers of
Ready-Mixed Concrete
Prestressed Concrete
Precast Products
Concrete Blocks
Concrete Pipe

JANUARY 1957

THE CONCRETE MANUFACTURER

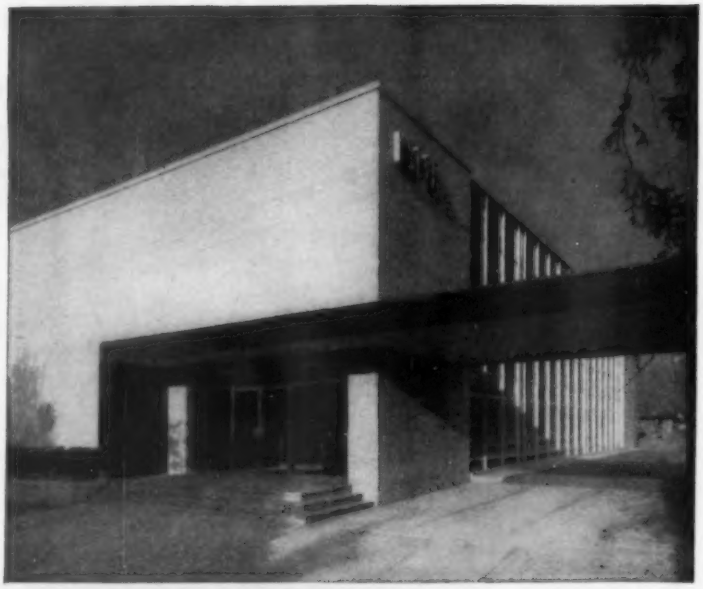
A SPECIAL SECTION OF PIT AND QUARRY

Placing Ready-Mix Two Miles High in the Rockies With Air-Pipe Line. (See page 306)

Better Building . . .

AT LESS COST!

Prestressed, Rigid-Frame Structure, Costing $1.72 per Sq. Ft., Finished Months Ahead of Estimated Schedule



● Well worth looking into, in these days of still-rising costs, is the economy potential of prestressed concrete construction. This 100-by-64-ft. office building, two floors and full basement, 18,000 sq. ft. of floor space, quality concrete throughout, was completed months ahead of estimated schedule. Utmost fire-safety and structural soundness, plus earlier occupancy and quicker return on owner's investment. In-place cost of precast prestressed structure, $1.72 per sq. ft.

Precast reinforced columns, 32 ft. on centers, have steel plates welded to girder plate, creating a rigid frame. Hollow girders, precast in halves and assembled into 32-ft.-long members, were post-tensioned with three cables before erection. Three additional continuous cables were added after erection. Inside of girders was filled with grout after tensioning.

Each 6-ft.-wide double-T floor section, supported on girders 33 ft. 4 in. on centers, is stressed with sixteen wire strands, pretensioned and bonded. 'Incor' 24-Hour Cement was used throughout in precasting, for the twin advantage of profitable speed with highest quality.

Required 4500 psi strength was attained after 17 hours steam curing—3-day strengths averaged 6000 psi. 'Incor' was also used in precast wall panels.

Another convincing example of always-dependable 'Incor'* performance—soundest possible reason for insisting on America's FIRST high early strength portland cement for time saving and quality assurance.

*Reg. U.S. Pat. Off.

☆

U. S. FIDELITY AND GUARANTY CO.
Office Building—Richmond, Va.

Architect: **J. HENLEY WALKER, JR.**

Structural Engineer: **WM. J. BLANTON**

General Contractor:
DANIELS CONSTRUCTION COMPANY

Members Prestressed by:
CONCRETE STRUCTURES, INCORPORATED

Precast Panels by:
ECONOMY CAST STONE COMPANY

—all of Richmond, Va.

☆

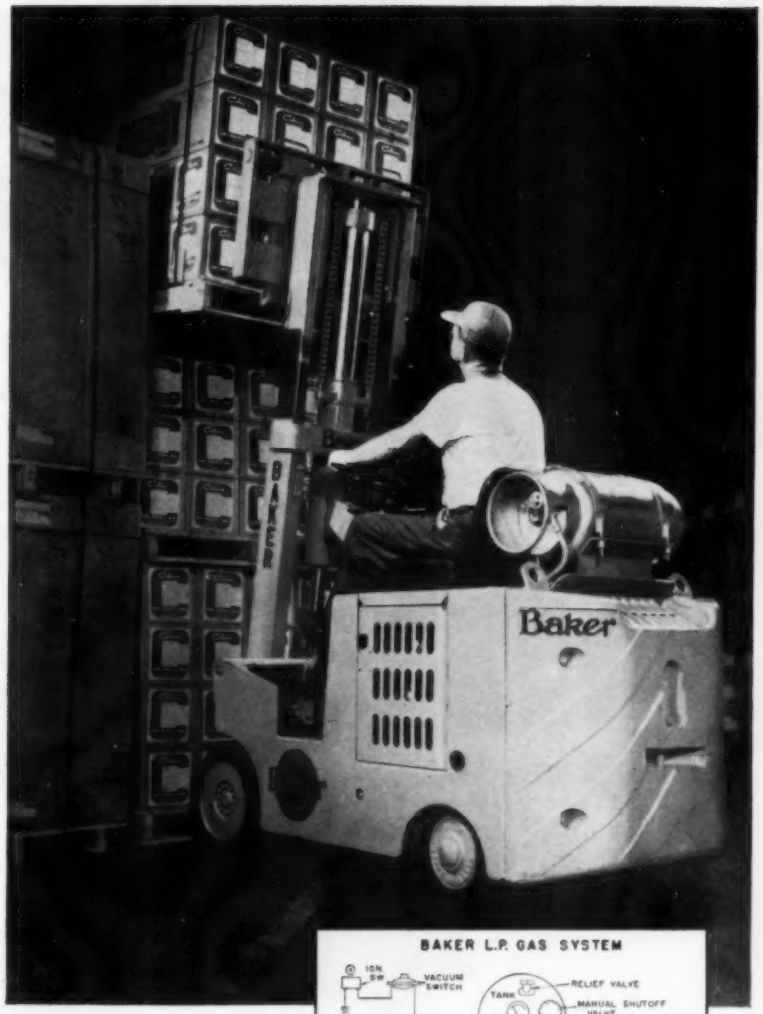
LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

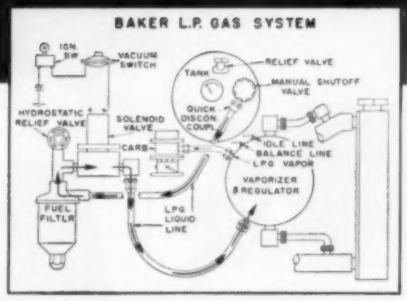
LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA.
BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON
INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK
NORFOLK • RICHMOND • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY

BAKER *offers LP gas fork trucks in 2000 to 7000 lb. capacities*





Arrows trace the flow of LP gas from the tank through the filter to the vaporizer and regulator before it enters the engine. The hydrostatic relief valve opens the system before dangerous pressure is reached in event of high ambient temperature changes. Automatic fuel shut-off is provided by solenoid valve and vacuum switches when engine stops. For maximum efficiency, the vaporizer preheats the LP gas before it passes to the regulator and the regulator reduces the pressure before the gas enters the carburetor.

The complete Baker line includes the BAKER LP gas fork trucks for those desiring the cost savings, cleaner operation, and other advantages provided by liquefied petroleum gas.

The Baker LP gas truck is powered by an engine specially designed for LP gas, not just a conversion unit. The special LP engine is provided with high compression head for maximum efficiency. Among the features are a special cold manifold and hot thermostat for cooler operation. Stellite-faced exhaust valves and solid Stellite inserts assure greater dependability and longer life. Complete vaporization and more efficient combustion mean lower oil consumption, less down time and reduced maintenance costs due to minimum cylinder wear. Fuel tank conveniently located behind the driver can be removed and full tank installed in less than a minute.

Write for information.

Baker® industrial trucks

THE BAKER-RAULANG COMPANY

1215 WEST 80th STREET • CLEVELAND 2, OHIO

A Subsidiary of the Otis Elevator Company

Otis

6G4

KENTHREE

PLAIN PALLET MACHINE with FRONT PALLET RETURN-

A Compact, Highly, Efficient Machine Incorporating Every Modern Technique.

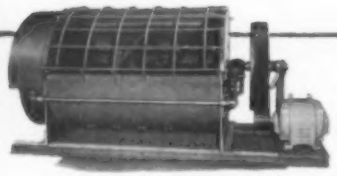
The amount of material, the time of agitation and vibration, accuracy as to size of the blocks, the forward movement of finished blocks, are all controlled electronically and hydraulically.

Electrically controlled hydraulic cylinders permit simplification of design with a sizable reduction in cost of production.

A magnetic spade permits the offbearer to pick up two pallets with three blocks on each and simultaneously drop two empty pallets, one of which immediately moves into position at each cycle.

The KENTWIN automatically produces three 8-inch blocks or equivalent at each cycle made from any aggregate.

Furthermore, because of its simplicity it is possible to price this machine attractively. See it by all means or write for descriptive literature.



KENT BATCH MIXERS

incorporating many features that assure efficient operation, large output and long life.

Capacities—12 to 75 cu. ft. per batch.

KENT BLOCKMAKER

A fast, semi-automatic machine that is relatively low in purchase price and cost of operation.

Economically provides high quality, single cored blocks.

KENT LINTELATOR

A machine that can help you expand your sales and profits through the production of concrete lintels, which are being more and more widely adapted because they are more satisfactory and less costly than steel members.

SEE THESE MACHINES

AT THE

N. C. M. A. SHOW

KIEL AUDITORIUM

February 25th to 28th

BOOTH "L"

You're also invited to spend a social evening with us at our suite in the Sheraton-Jefferson Hotel.

The KENT MACHINE CO.

CUYAHOGA FALLS, OHIO • *Division of The Lamson & Sessions Company*

Concrete Products Machinery Since 1925 **Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ont**

The CONCRETE MANUFACTURER

January 1957

"Many Receive Advice--Only the Wise Profit by It"

THIS excellent admonition, offered by Syrus ages ago, still stands as an admirable contribution to our efforts, as we review the accomplishments of the past year and look forward to the one ahead. We have just finished a survey of the industries which go to make up the concrete production establishment of this country, and in so doing have perused numbers of statements of producers as to what they did in 1956, and what they expect to do this year. In thus putting the eye of discernment and appraisal on the individual operations, one learns many things, not the least of which is to profit by advice.

One of the segments of this industry—concrete block—has enjoyed an even tenor of production increases for nearly two decades, until last year, when the "breathing spell" occurred. Those producers who had anticipated the slackening in the housing and other markets in which block is mainly used, who had heeded the predictions of the Department of Commerce that this was likely, and had tightened their belts here and there, or found new uses for block, profited in 1956. Those who unheedingly assumed the upward spiral would carry them along, find themselves with plenty of unsold stock at the year's end.

More pronounced than in any of its five years of initial progress, a new segment of the concrete industry—prestressed concrete—in 1956 caused many ready-mixed concrete producers to wonder to what degree this newcomer in this field would influence their future operations. A relatively few such producers had already scanned the horizon of possibilities, planned how they could profit by definitely tying up with the new operations springing up on every hand, and are today viewing the future with increased confidence.

There have already been failures in the ranks of the prestressed concrete contingent, men who failed to heed the advice of seasoned entrepreneurs who warned that it wasn't a game for marbles and that it took more than pennies to finance properly. There have also been signal successes recorded by firms who appreciated the potential of the new field, and who planned accordingly. Already these are snugly established to meet the threats of competition that will ensue.

Lest the conclusion be drawn that we are pessimistically influenced by the perusals of the industries named, we hasten to assure all that 1956 had its many good points, and while it now stands in the shadow of the record 1955 construction, perhaps one day its warnings may prove more valuable to us than its material gains. "There's none so blind as they that won't see," and we don't mean you, naturally!

Roy L. Peck

BESSER VIBRAPAC

The choice of leading block makers

World-famous concrete block machine — fully automatic, including front feeding of pallets • Produces high quality block in all types and sizes on one set of Plain Pallets—faster—more economically • Operated by the famous Besser cam and roller principle of power application • Automatic feed control — feeding by "guess" is eliminated • Two 10 h.p. motors give undirectional vibration under 2000 lbs. pressure • Instantaneous mold release — quick attachment change • Anti-friction bearings throughout • Automatic lubrication while the machine is running — all bearings fully protected.

Ask your nearby Besser representative for complete information.

BESSER compa

World's Leading Manufacturer of Block Machinery

BOX 131, ALPENA, MICHIGAN, U. S. A.

BESSER

A 6-

See the Vibrapac in Operation • NCMA Convention, St. Louis • Feb. 25-2

News of the Concrete Industries

Illinois Brick Co. Acquires Oswalt Co. Block Plant At Broadview, Ill., Site

The Illinois Brick Company, Chicago, Ill., has purchased the land, buildings, machinery, equipment, and inventory of the Oswalt Company, a concrete block firm located in Broadview, Ill.

This purchase will increase Illinois Brick's block capacity production by one-third. Eventually the plant will be equipped with high-pressure-steam curing, and the nine-acre site is large enough to permit further expansion.

The Oswalt Company, established in 1921, constructed its Broadview plant in 1953.

Charleroi Supply Co. Becomes Department of Dravo Corp.

Charleroi Supply Company, Charleroi, Pa., a wholly owned subsidiary of Dravo Corporation, became an operating department of the parent firm on December 1. No changes will be made in the present management, personnel, or operations of Charleroi Supply, which also operates branch yards in Monessen and Bentleyville, Pa.

Charleroi Supply, which provides a line of ready-mixed concrete, sand and gravel, and related commodities, was incorporated in 1920. Two years later the controlling interest was acquired by the Keystone Sand & Supply Company, now the Keystone Division of Dravo.

Operations of Charleroi were expanded in 1936, when the Bentleyville Yard was acquired, and again in 1944, when the Monessen branch yard was started. In 1954 the company purchased the Charleroi Lumber Company.

U.S. Durox Corp. Erecting $500,000 Block Plant in Denver

The United States Durox Corporation has begun construction of a $500,000 plant in Denver, Colo., for the production of Durox building blocks. This plant will have a daily capacity of 24,000 8-in. building blocks or 48,000 sq. ft. of 4-in. floor decking.

According to Robert P. Anderson, president, Durox has great strength, and buildings of up to five stories have been built with Durox without additional reinforcement. Durox block can be sawed, nailed, bored, and hewn with common woodworking tools.

Durox is an incombustible, lightweight, inorganic siliceous material, having sound insulation properties. It is unaffected by rot, termites, fungus, and water saturation. The product is made like ordinary concrete from cement, water, and lime —but powdered aluminum is added. This acts as a "yeast" to make the mixture "raise"; it is sometimes called "gas concrete."

● Concrete Industries Yearbook

The available supply of the 1956 CONCRETE INDUSTRIES YEARBOOK has been depleted. The 1957 issue of this publication will be available about June 1, 1957. We have available an adequate supply of reprints of Part III — the Prestressed Concrete Section of the 1956 Yearbook (32 pages), priced at 25 cents per copy.

Coming Events

January 16-17, 1957—Milwaukee. 36th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

January 17-19, 1957 — Montreal. Annual convention, National Concrete Products Association. The Sheraton Mount Royal.

February 11-14, 1957—Los Angeles. 27th annual convention, National Ready Mixed Concrete Association. Statler Hotel.

February 25-28, 1957—St. Louis. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

February 25-28, 1957—Dallas. 53rd annual convention, American Concrete Institute, Statler-Hilton Hotel.

March 5-9, 1957—Washington, D.C. 49th annual convention, American Concrete Pipe Association. Shoreham Hotel.

Prestressed Plant Opened At Rays Crossing, Ind. By Leap of Indiana, Inc.

Leap of Indiana, Inc., recently went into production at Rays Crossing, Ind., under a franchise of Leap Concrete, Lakeland, Fla., which developed a process for making prestressed concrete. The prestressed concrete members to be produced at the new plant include single and double Tee floor slabs. Other structural members, such as bridge pilings, telephone poles, fence posts, and I beams, may be added later.

Officials of the franchised Indiana affiliate include Eldo H. Johnson, president; Ralph Roth, vice-president; Paul Douglas, secretary-treasurer; and Robert Johnson, general manager.

The prestressing process employs a patented bed formula, and the construction theory originated in Germany.

Dr. Legatski Named V.-Pres. Of Elastizell Corporation

Dr. Leo M. Legatski, professor of civil engineering at the University of Michigan, has been elected vice-president of engineering and research and a director of the Elastizell Corporation of America, Detroit, Mich. Dr. Legatski, widely known authority in the field of concrete, will make his headquarters in Alpena.

The company controls the distribution in the United States and Canada of Elastizell, a material and process for making a versatile lightweight concrete.

Others elected to corporate offices include Jesse H. Besser (president, the Besser Company), chairman of the board; Raymond M. Douglas, president; Edwin H. Rosenthaler, executive vice-president ;and Marx P. Rosenthaler, treasurer.

George Hyde Redding, president of the Massey Concrete Products Company, Chicago, Ill., died on November 23, 1956, at a local hospital. He was 64 years old. Mr. Redding was also president of the Canadian Concrete Products Company, board chairman of Mt. Vernon Company, and a past president of the American Concrete Pipe Association.

A.C.I. Schedules Program For 53rd Annual Meeting In Dallas, February 25-28

The 53rd annual convention of the American Concrete Institute will be held from February 25 through 28, 1957, at the Statler-Hilton Hotel, Dallas, Tex.

After one day of technical committee meetings, three days will be devoted to general sessions on concrete design and construction, materials, prestressed concrete, lightweight aggregates, and the annual research session. As in the past, the convention will include consideration of certain A.C.I. standards, the presentation of awards to distinguished members, and the introduction of new officers for 1957.

Strong attendance is expected to mark the first A.C.I. convention in Texas. A successful regional meeting was held in Houston three years ago. Cedric Willson, vice-president, Texas Industries, Inc., Dallas, will be general chairman of the Dallas committee on general arrangements.

Gunite Contractors' Bulletin Explains Restoration Method

Rehabilitation with Gunite, a 4-page bulletin offered by the Gunite Contractors Association, describes how old concrete structures can be inexpensively rehabilitated both structurally and architecturally. The bulletin includes progress photos and details of the step-by-step processes in the rehabilitation of a high school building.

Copies maybe obtained by writing to the Gunite Contractors Association, 714 W. Olympic Blvd., Los Angeles 15, Calif.

Building Material Firms Form Toledo Association

Eleven building material firms have announced the formation of the Material Dealers Association of Greater Toledo, which has been organized to meet and consider industry-wide matters, including quality and service.

Member companies include the following: Columbia Concrete Products Company, Kuhlman Builders Supply & Brick Company, the National Cement Products Company, the Nicholson Concrete Company, the South Dixie Supply Company, and the Toledo Plaster & Supply Company.

Robert M. Fellabaum is president of the newly-formed organization. Other officers are Harry Deshler, vice-president, and Allan J. Conkle, secretary-treasurer.

Arthur B. Babbitt

Arthur B. Babbitt of Kent Dies at Los Angeles Home

Arthur B. Babbitt, who retired in 1947 after nearly 30 years with the Kent Machine Corporation, Cuyahoga Falls, Ohio, first as general manager, and then as president, died recently at Los Angeles, Calif.

Mr. Babbitt had made his home, since his retirement, at Glendale, Calif.

Peter Emerson Reyerson, 73, owner of the Imperial Valley Concrete Company, El Centro, Calif., died recently after a brief illness. Mr. Reyerson acquired Imperial Valley Concrete in 1923, and operated it until his retirement in 1952. The firm is now known as The Ryerson Concrete Company.

The Nelson Concrete Stone Company, Baltimore, Md., is erecting a new plant at White Marsh. This company, which started in business 30 years ago, is also known as Miller-Nelson, Inc.

Our Cover Picture

• This snowy, summer-time view near the top of Pike's Peak shows an unusual method of placing 235 cu. yd. of ready-mix concrete through a 6-in. pipeline for the anchor blocks of a new water line to Colorado Springs, Colo. Jaeger truck mixers spent 80 minutes on the 17-mile haul up the mountain to the 9,700-ft. elevation, and spent another 40 minutes discharging 5-cu. yd. batches 2,300 ft. down the pipeline, which had a 1,100-ft. fall in elevation. The concrete, of 5-in. slump, was forced through the pipe by air pressure aided by gravity.

N.R.M.C.A.—N.S.G.A. Issue New Instruction Manual On Proportioning Concrete

Estimating Proportions for Concrete is the title of an instruction manual published jointly by the Engineering Divisions of the National Ready Mixed Concrete Association and the National Sand and Gravel Association. The booklet, written by Stanton Walker and Delmar L. Bloem, is being distributed as N.R.M.C.A. Publication No. 69 and N.S.G.A. Circular No. 68.

The booklet has been prepared for use as a textbook at the annual short course of instruction for technicians of the ready-mixed concrete and sand and gravel industries. This course is sponsored by the two Associations in co-operation with the College of Engineering of the University of Maryland.

This publication is based on the following bulletins and supersedes them: *Proportioning Concrete Mixtures, Exercises in Design of Concrete Mixtures, Calculating the Proportions for Concrete,* and *Exercises in Calculating Proportions for Concrete.*

Single copies are available on request to either the National Ready Mixed Concrete Association or the National Sand and Gravel Association, Munsey Building, Washington 4, D.C. Additional copies will be furnished at 50 cents each up to 10. Larger quantities may be obtained at a discount.

Canadian Concrete Firm Opens New Pipe, Block Plant

Jeffries Concrete Products Limited, an affiliate of Jeffries and Sons Limited, Calgary, Alta., recently opened another concrete products plant at Lethbridge.

At the present time the plant is set up to produce concrete pipe 8 to 54 in. in diameter. Provision has been made to allow for the addition of other concrete products and precast work.

Jeffries and Sons Limited has been producing both pipe and block at its Calgary plant for several years.

J. E. McWatty, Wilmington, N.C., was elected president of the Carolinas Ready Mixed Concrete Association at the annual meeting, held recently at Southern Pines, N.C. J. W. Hassell Jr., Charleston, was elected vice-president. Other officers chosen were Allan Owen, Piedmont Construction Company, Winston-Salem, N.C., secretary, and A. L. Muirhead, Durham, N.C., treasurer.

...new yardstick for measuring profits!

Towmotor Mass-Handling—moving more units faster, at lower cost—can well be the investment that promises greatest improvement in your future profits, as you face continually rising costs and a shrinking manpower pool.

Integrating Towmotor lift trucks in your departmental operations lets you *supplement* your personnel without adding to your payroll. Enables your men to do a bigger day's work *easier*. Sends them home *fresher*. Permits each one to handle jobs you'd pay a *crew* to do!

Have you seen the new Towmotor lift trucks lately? They offer a wealth of "first-time" features such as:

- Fatigue-free adjustable seating
- Motion-saving "centralized control"
- Maximum free lift that tops all
- No-loss hydraulic lifting action
- Power steering that saves 80% of operator's efforts

Get Bulletin SP-23 on new Towmotor lift trucks from Towmotor Corporation, Cleveland 10, Ohio.

Leaders for 38 years in building Fork Lift Trucks, Tractors and Carriers

TOWMOTOR — THE ONE-MAN-GANG® — GERLINGER

Gerlinger Carrier Company, Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland 10, Ohio

R. P. Hansgen, Engineer Of Benton Building Co., Joins West Coast Shell

R. P. Hansgen

R. Paul Hansgen recently assumed the position of general superintendent and chief engineer of the West Coast Shell Corporation, Sarasota, Fla., manufacturer of prestressed concrete building components and special structures.

Mr. Hansgen was superintendent of the Benton Building Company from 1949 to 1956, during which time he organized and operated the R. Paul Hansgen and Associates Engineering and Surveying Company. Previously he was affiliated with several other engineering firms.

Michigan Products Concern Opens New Office Building

A new office and warehouse building has been constructed for the Modern Cement Products Company, Grand Rapids, Mich. The new structure represents the first major expansion of the 11-year-old company, which is operated by Albert and Stephen Borkowski.

Naturally, the firm's own products were used for both the interior and exterior of the building. Over a dozen different styles, designs, and colors of manufactured concrete products were used in its construction.

Block, Ready-Mix Operations Opened in Many Locations

The North Star Concrete Company, Mankato, Minn., is constructing a new plant for the manufacture of concrete blocks in the Rochester, Minn., area, according to a recent announcement.

Best Blocks, Inc., is the name of a new company, previously associated with Best Concrete Products, Inc., San Francisco, Calif. The new firm will operate as a separate company with a new plant at San Leandro, Calif., and will be headed by Kenneth H. Best, president and general manager.

Chelan Concrete Company, Chelan, Wash., has been purchased by Ole Sandum, one of the co-partners of the business operated for the last six years as a producer of concrete blocks, sand and gravel, ready-mix concrete, and other building materials.

All stock held by outside interests in the Texas Concrete Products Corporation, Austin, Tex., has been purchased by a management group headed by Victor L. Brooks, of Austin, president. Last year's volume of business in concrete products amounted to over $7,000,000.

A. M. Risher Ready-Mix Concrete Company, Linton, Ind., has announced sale of the company to the Miller-Turpen Company. The new owner contemplates expansion of the business at a new location. E. E. Richardson will be manager.

Butler Lime & Cement Company, Butler (Milwaukee), Wis., formally opened its new ready-mixed concrete plant recently. It is said to be the largest plant of its type in Wisconsin, and is an affiliate of Tews Lime & Cement Co., Milwaukee, a producer of ready-mix.

Ready Mixed Concrete Company, Smithfield, N.C., a new ready-mix firm headed by A. S. Cretini, has built a new plant near Smithfield. For the present six trucks will handle the output of concrete locally.

Prestressed Concrete, Inc., is building a new plant in Bay County, Fla., to produce piling and girders. It will have its own ready-mixed concrete plant in connection with this operation. The company is a branch of Noonan Construction Company, Panama City, Fla.

Hobbs Concrete Blocks Limited, Edmonton, Alta., will construct a $60,000 concrete plant to replace the firm's present facility. Capacity of the plant is expected to be 12,000 blocks per day.

• Correction

In reproducing *Concrete Mixer Hazards* in the December issue of THE CONCRETE MANUFACTURER (page 200), we neglected to say that this article was published by the National Concrete Masonry Association as Safety Bulletin No. 10.—Sorry!

Portland Cement Assn. To Show New Techniques At A.R.B.A. Road Show

The newest in concrete construction techniques will be shown by the Portland Cement Association at the A.R.B.A. Road Show to be held in Chicago's International Amphitheater from January 28 to February 2. The exhibit will feature prestressed concrete, as well as the first heavy-duty paving jobs inaugurating the nation's 13-year highway program.

The theme of the exhibit, *Concrete Is in America's Future,* will be dramatized in pictures, films, and slides. A feature of the exhibit will be a motion picture on the construction of the largest prestressed concrete job to date, the Lake Ponchartrain, La., bridge. This film, to be shown throughout the Road Show, tell the dramatic story of the longest over-the-water structure ever built.

Other sections of the exhibit will illustrate the use of soil-cement for stabilized shoulders and reinforced concrete culverts for drainage on Interstate System roads.

Howard Messmore Dies at 45—Servicised Products Executive

H. Messmore

Howard Messmore, assistant sales manager, Servicised Products Corporation, died on December 12, 1956, at the age of 45. Mr. Messmore supervised and covered all states east of the Mississippi River for Servicised Products. He started with the company as purchasing agent in 1941, and is well known in the concrete industries. He was a member of the American Road Builders Association, and was on the Materials and Supply Division Committee of A.R.B.A.

Mr. Messmore was also an active member of the National Concrete Masonry Association, and the National Ready Mixed Concrete Assn.

Robert Beasley has been appointed representative for Edick Laboratories, Inc., Milwaukee, Wis., in eastern Pennsylvania, eastern New York, and New Jersey. Edick produces chemicals and electronic equipment for the concrete block and concrete products industry.

New Barber-Greene conveyor, erected in just 2½ days after the fire, boosts tonnage from 250 tons a day to 250 tons per hour.

Conveyor destroyed by fire on Monday
New one operating Friday

On Monday fire roared up a wooden conveyor owned and operated by a Milwaukee cement block company. Out of the devastation only the wooden "A" frames remained. Without the conveyor, production was at a standstill.

At 6:00 the following morning the owner called the local Barber-Greene distributor to see what could be done. Drawing from his own stock of standardized conveyor components—trusses, idlers, drives—the distributor was able to rush all the necessary components to the burned out plant by noon. And by Friday morning the new conveyor was erected and operating.

This fire and the quick return to normal operations point up the basic advantages of Barber-Greene *standardized* components. These advantages include: quick delivery from stocks of standardized components . . . elimination of engineering time required when building "custom-made" conveyors . . . and fast, easy erection.

Trouble-free operation is an additional benefit of the factory aligned and adjusted drives and terminals. Flexibility in shortening or lengthening your conveyor is another plus.

Write for information on Barber-Greene *Standardized* conveyor components

56-12-PE

Barber-Greene BG

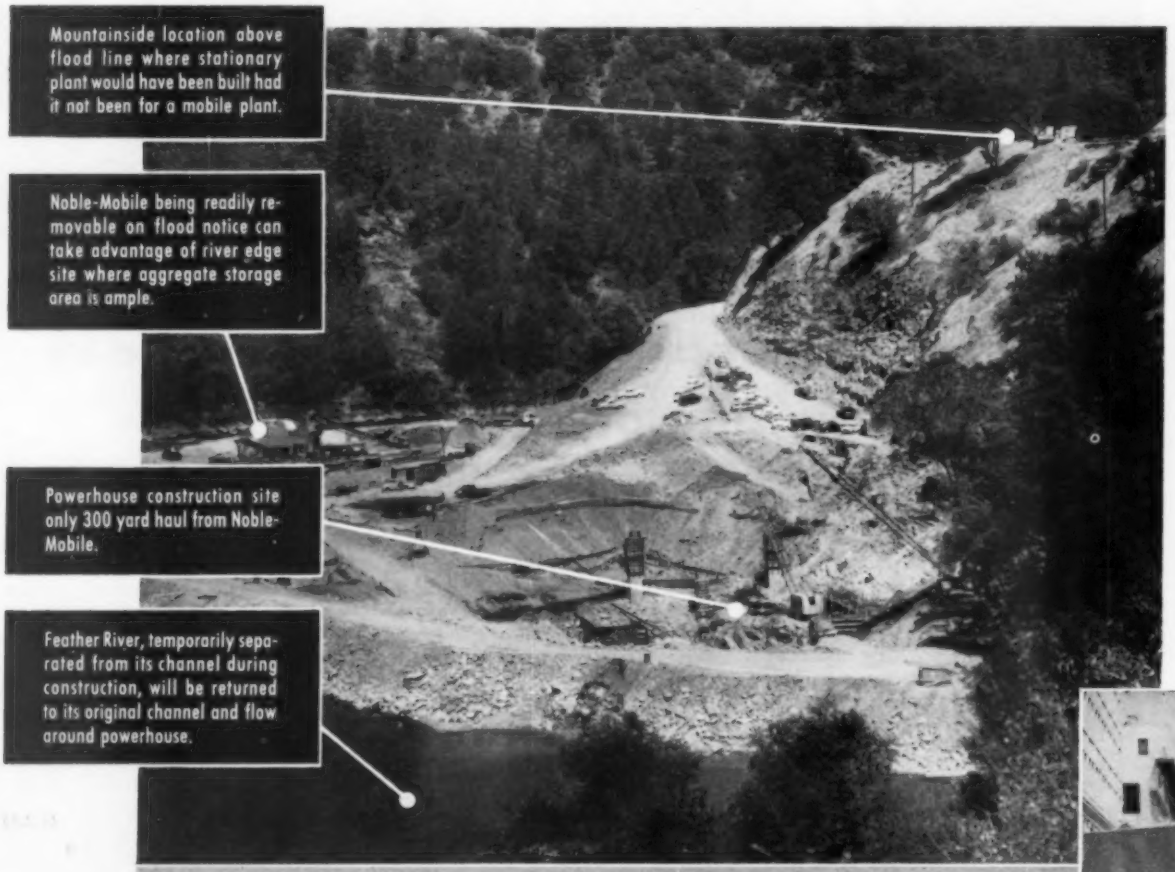
AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

How NOBLE-MOBILE solved flood

Flash floods that could wash away a fixed batching plant installation were a threat at the site of the powerhouse construction by the Bechtel Corporation for Pacific Gas & Electric Company on the Feather River, California. A gravel bar at the river edge was the logical site for a concrete batching plant because it was the only place with sufficient area for aggregate storage. Yet, with flood danger, the only practical alternative site was a point 110 ft. up the canyon wall off the Western Pacific Railroad right-of-way. A stationary plant there would have required extensive concrete foundations and a major earthmoving job to level an area of sufficient size to store aggregates. The site also would have entailed transit truck hauls under all weather conditions down a steep grade.

Noble-Mobile made the mountainside installation unnecessary. This batching plant on wheels was put into operation at the river edge as it could be hauled out to high ground on only a day's notice of flood. The mobility permitted scheduling work for 12 months a year so that the job could be completed by 1958. Noble-Mobile saved 70% in installation costs as against a stationary, mountainside plant. On this project, Noble-Mobile normally has to operate only 50% of the working day in order to provide the 25,000 yards of concrete that ultimately will be used. The batch is hauled by transit trucks to the construction site only 300 yards distant.


Mountainside location above flood line where stationary plant would have been built had it not been for a mobile plant.
Noble-Mobile being readily removable on flood notice can take advantage of river edge site where aggregate storage area is ample.
Powerhouse construction site only 300 yard haul from Noble-Mobile.
Feather River, temporarily separated from its channel during construction, will be returned to its original channel and flow around powerhouse.

View of construction of semi-outdoor powerhouse designed to withstand the damaging effects of flood. Outside dimensions will be 175 ft. by 116 ft. by 87 ft. high. Construction area has been separated from the river course by a low temporary levee around the area for the period of the construction. The foundation of the plant is at the bottom of an excavation to a depth of 51 feet below the river surface. On completion of the project, the river will be returned to its original channel. 36 ft. of the powerhouse will extend above the normal river level.

NOBLE-MOBILE *Batchmobile*
Covered by patents pending

WRITE FOR CIRCULAR

THE NOBLE COMPANY • 1860-7TH ST., OAKLAND 20, CALIF. • TEMPLEBAR 2-5785
Branches: 20950 Center Ridge Road, Cleveland 16, Ohio. EDison 1-3426
518 First Ave. North, Seattle, Wash. MUtual 4878
218 Richmond St., El Segundo (Los Angeles), Calif. EAstgate 2-4518
International Sales Agent: Frazar International Corp., San Francisco

problem and saved 70% in installation cost

NOBLE-MOBILE BATCHING PLANT

supplies concrete to transit trucks. May also be used for dry batch or pre-mix. Has bulk cement storage silo with truck hopper unloading screw and elevator. Weighs aggregates and cement separately and simultaneously. Automatic or semi-automatic control. No field wiring, concrete foundations or crane time required on base plant.

Noble-Mobile is driven to the job site and goes into production promptly. Purchase is easier to finance than stationary plant.

1,000 yards of 2½", 1½", ¾" aggregates and sand, hauled by truck from Oroville 25.1 miles away, are stored in compartmented piles at the site. They are fed by a scooploader to a conveyor leading to the plant. The materials are automatically batched and discharged by a conveyor to the transit trucks for the approximate 2-minute haul to the pouring site.

DISTRIBUTORS: BIRMINGHAM, ALA., Equipment Service Co. • PHOENIX, ARIZ., Superior Equipment Co. • VANCOUVER, B. C., Westcoast Equipment Co., Ltd. • DENVER, COLO., Western Machinery Co. • BALTIMORE, MD., General Supply & Equipment Co., Inc. • CEDAR RAPIDS, IOWA, James W. Bell Co. • INDIANAPOLIS, IND., Manwaring Machinery Co. • DETROIT, MICH., R. G. Moeller Co. • ST. PAUL, MINN., Barchert-Ingersoll, Inc. • CLEVELAND, OHIO, Wepco Equipment Co. • LOS ANGELES, CALIF., Smith-Booth-Usher Co. • PORTLAND, ORE., Clyde Equipment Co. • PHILADELPHIA, PA., Furnival Machinery Co. • PITTSBURGH, PA., Equipment & Supplies, Inc. • AMARILLO, TEXAS, Plains Machinery Co. • DALLAS, TEXAS, North Texas Equipment and Supply Co. • HOUSTON, TEXAS, Boehck Engineering Co. • EL PASO, TEXAS, Border Machinery Co. • WACO, TEXAS, Richards Equipment Co. • SAN ANTONIO, TEXAS, Contractors Machinery Co. • SALT LAKE CITY, UTAH, Arnold Machinery Co. • SEATTLE, WASH., Star Machinery Co. • SPOKANE, WASH., Intermountain Equipment Co. • CASPER, WYOMING, Studer Tractor & Equipment Co. • MONTREAL, QUE., Laurentide Equipment Co., Ltd. • WINNIPEG, MAN., Huggard Equipment Co., Ltd. • BOSTON, MASS., Hedge & Mattheis Co. • LOUISVILLE, KY., Emmett C. Watson Co. • NASHVILLE, TENN., Peterson Machinery Co.

Ready-Mix Operator Uses Truck-Mixers To Prepare and Spread Slurry Seal

Squeegee-spreader trails behind truck-mixer applying a thin surface coating of slurry emulsion to a worn pavement. The mixer revolves slowly and discharges continuously into the spreader box as it moves along. Retracted wheels on the box are used to trail it to and from the job site.

BACK in 1953, when an acute cement shortage was idling many southern California batch plants and truck-mixer fleets, "Ike" Kuening, owner of Puente Ready Mix, Inc., Puente, Calif., had an idea.

The Los Angeles County road department at that time was experimenting with the application of a thin emulsified asphalt-aggregate seal coat for pavements and readily co-operated with Mr. Kuening in his proposal that the mixtures be prepared in his truck-mixers and applied directly behind the mixer through a spreading device he had designed.

Since that time, the Puente truck-mixers have prepared and applied emulsion-aggregate slurry on hundreds of miles of worn pavement surfaces in a score of nearby communities, parking lots, and the like. The latest job involved the complete coating of the 80-acre parking area serving the patrons of Santa Anita Park race-track in Arcadia.

Mix designs vary with the job but ordinarily consist of SS-2 (65-85 penetration) asphalt, crusher "dust" in the 20- to 200-mesh range, and a small quantity of water. The asphalt is stored in a 10,000-gal. tank at the Puente batch plant. Fine aggregate is weighed out by the regular ready-mix batching equipment, the asphalt and water being metered directly into the drums of Willard Model 601L 6-cu.yd. truck-mixers. Mixing and agitating are one in transit.

Arriving at the job, the special 8-by 10-ft. spreader is hooked up for trailing behind the mixer and the thin seal coat is ready to apply. The spreader is simply a steel bottomless box fitted with a neoprene squeegee. As the truck-mixer discharges into the box it travels along slowly, the coating—as thin as 0.10 in.—being laid in a 10-ft. wide ribbon. An 8-ton load is sufficient to surface or seal 15,000 to 20,000 sq.ft. of pavement.

Puente Ready Mix owns three Willard Model 601L truck-mixers which have been found ideal for preparing and applying the surface treatment. Frequent turnings are required and these short-coupled units are easy to maneuver. Close control of discharge is also very important in this service, and the Willard units, with brake, throttle, and clutch-drum control combined on a single lever, make manipulation easy.

Texas Concrete Block Maker Gives Engineering Scholarships

Black-Brollier, Inc., Houston, Texas, manufacturer of concrete products, this last Christmas paid a long-felt debt of gratitude to the building industry which enabled their firm to grow and prosper. They announced the first annual Black-Brollier Scholarships, designed to help three worthy architectural and engineering students obtain their education at Texas A. & M. College and Rice Institute.

In the announcement made to the industry, the firm stated that it felt that similar programs undoubtedly have been introduced in other parts of the country, but that because of the need for more trained engineers, they wanted to do their part in this enrollment in as practical a way as possible. We feel that such procedure on the part of any block producer is worthy of publcity and wish that it could happen more often.

R. L. Marshall Appointed To Staff of Texas Industries

R. L. Marshall has been named Dallas area sales representative for the Texcrete Structural Products Company, an affiliate of Texas Industries, Inc., Dallas, Tex.

Mr. Marshall previously headed his own construction and engineering firm in Dallas. He is an engineering graduate of Southern Methodist University, and is a member of the American Society of Civil Engineers.

Texcrete Structural Products Company produces precast concrete roof and floor channels, girders, and other concrete elements used in commercial and industrial buildings.

Foreign Concrete Concerns Offer New Ideas, Techniques

A Swiss firm has developed a method of making concrete pipes with a smooth, mirror-like finish on the inside, and a dense, small-grained, non-porous surface which is highly resistant to abrasion and corrosion. The advantages claimed are longer life and greater capacity for a given drainage gradient.

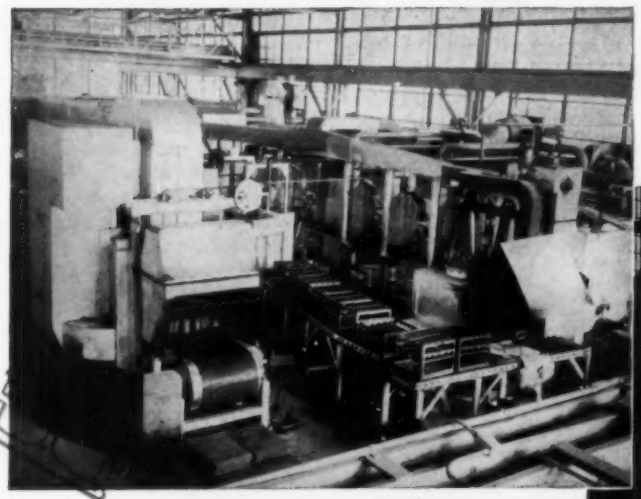
A Danish firm of engineers and builders has offered new techniques, designs, and experience in the field of prestressed, prefabricated concrete units. It is reported that their assembly line methods save time and labor, and that the prestressed reinforcing saves on weight and material.

In Sweden a manufacturer has presented a concrete block machine which makes from 360 to 1,000 blocks per hour, semi-automatically. It is reported to have aroused considerable interest in the United States and Germany. For making both bricks and blocks, the machine is operated by one man using electric and hydraulic controls. There are two hoppers feeding two sets of block molds shuttling back and forth on an electrically-powered carriage. Two-stage vibration insures a dense, clean block which can support a 400-lb. weight immediately after it comes from the machine.

Officers of the recently incorporated Petersburg Concrete Pipe and Products Company, Richmond, Va., are Stanley R. Navas, president; Harry W. Easterly Jr., executive vice-president; Henry C. Hofheimer II, secretary-treasurer; and Jack M. Parris Jr., assistant secretary-treasurer.

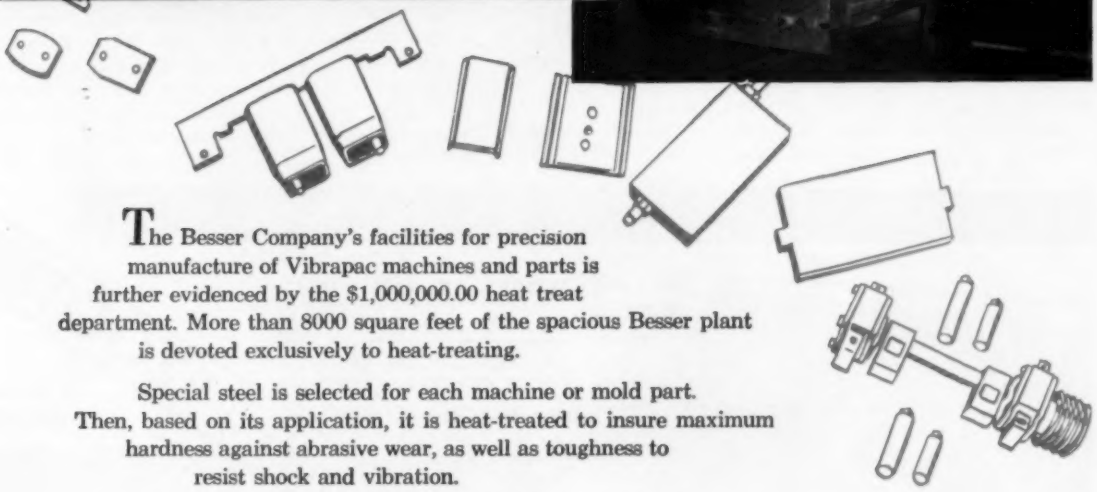
Million Dollar Heat Treat Department

Insures QUALITY CONTROL!



Interior view of the million dollar Besser Heat Treat Department.

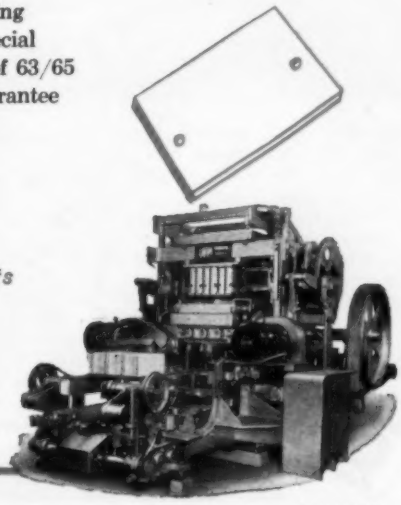
Car furnace showing car loaded with parts before entering furnace.



The Besser Company's facilities for precision manufacture of Vibrapac machines and parts is further evidenced by the $1,000,000.00 heat treat department. More than 8000 square feet of the spacious Besser plant is devoted exclusively to heat-treating.

Special steel is selected for each machine or mold part. Then, based on its application, it is heat-treated to insure maximum hardness against abrasive wear, as well as toughness to resist shock and vibration.

Tip to Block Makers — You can save money by buying Besser Standard Division Plates because they are made of special alloy steel, heat-treated to a Rockwell "C" hardness of 63/65 and a case depth of 5/64" per side — then tempered to guarantee uniformity of hardness and finally 100% inspected.



BESSER Company

BOX 131, ALPENA, MICHIGAN, U.S.A.

Complete Equipment for Concrete Block Plants

BESSER Genuine PARTS

GENUINE VIBRAPAC PARTS ARE MADE ONLY BY BESSER

A 8898-1PC

Highway Research Board Abstracts Concrete Papers

AMONG the papers scheduled for presentation at the meeting of the Highway Research Board, Sheraton-Park Hotel, Washington, D. C., January 7-11, the following are of interest to members of the concrete industry:

Theoretical and Practical Aspects of Prestressed Concrete for Highway Pavements— by Thomas Cholnoky, Sinjon, Inc., Greenwich, Conn. This paper gives detailed information and the test results of an experimental prestressed concrete slab 500 ft. long, built at the Patuxent River Naval Air Station, Md. The results are evaluated with special regard to highway pavements.

The results indicate that efficient means of developing prestressing in the concrete are mandatory. Base frictions and losses during and after prestressing must be kept at the minimum. Once the minimum amount of prestressing is determined and provided, the slab will behave as a continuous pavement. This will eliminate most of the transverse contraction joints in highway pavements.

The load-carrying capacity of such pavements was found to be extremely high; therefore, reduction of pavement thickness will be possible within practical limits. Difficulties experienced during construction will have to be eliminated and methods found to produce such pavements with similar efficiency and at no high cost than those built with presently used methods.

Model Studies of Prestressed Rigid Pavements for Airfields— by Paul F. Carlton and Ruth M. Behrmann, Ohio River Division Laboratories, Corps of Engineers. This discussion is a preliminary report on a continuing study; it describes the design and construction of small-scale models of prestressed rigid pavements for airfields. Data are presented from a number of slabs tested under various conditions of prestressing and testing.

Results completed to date show that prestressing increases the range of the working stresses in the slab, and, to an even greater degree, increases the effective load-carrying capacity of the pavement by holding the cracked portions together as a unit.

French and British Procedures in in the Design of Prestressed Pavements— by Phillip L. Melville, office, Chief of Engineers, U. S. Army. This is a review of current practices in the design of prestressed pavements for roads and airports in France and Britain. Major prestressed pavements are considered and analyzed, outlining design trends in relation to U. S. methods of computing slab thickness and amount of prestress as a function of load, traffic, subgrade, and climate. Experience in design of rigid pavements by Westergaard's and Boussinesq's methods is often used in Western Europe as a guide for the determination of slab thickness for runways and taxiways.

Endurance of a Full-scale Pre-Tensioned Concrete Beam—by K. E. Knudsen and W. J. Eney, Lehigh University. This paper presents the behavior of a strand-reinforced pretensioned concrete beam under 1,-300,000 repetitions of an equivalent

(Continued on page 320)

The High Speed GRIFFIN Portable Cement Loader

WORKS AT ANY ANGLE
UP TO 300 BBLS./HR.
11' TO 100' IN LENGTH

from bulk cement car

10-DAY DELIVERY

Write for Details

to truck

CEMENT Z-Z-Z-Z-Z-OOMS!...in the "ZOOTER"

"ZOOTER" is the modern, simple, economical way to *speed-load* trucks, bins, mixers and batchers from bulk cement cars.

Proved in scores of installations. Operates just as smoothly and easily in vertical position. Cuts loading time and labor costs to minimum.

View at right shows 11 foot unit with wheel-mounted, welded steel tubing frame, adjustable for height, and all accessories for feeding vertically to 21 feet. Price $1259.00, F.O.B. Honeoye, N.Y.

Also available in standard 11' to 30' lengths—over 30' multiple sections used.

Prices subject to change without notice.

LARRY GRIFFIN CORP., 3001 James St., Syracuse, N. Y., Phone: 73-1514

LEHIGH EARLY STRENGTH CEMENT
speeds production of prestressed bridge units

For maximum production efficiency, Juno Prestressors, Inc., uses Lehigh Early Strength Cement in the manufacture of prestressed concrete units for Florida State Road and Turnpike bridges.

With Lehigh Early Strength Cement, their prestressed beams, for instance, reach the specified strength of 4000 P.S.I. in ½ the time required with regular cement . . . without the use of any accelerated curing methods. This makes it possible to expedite the movement of the finished products and to *double the output of casting beds* without Saturday or Sunday work.

Whatever your cement requirements, there are Lehigh Cements to fit them. And remember, in the manufacture of special precast units, chances are that Lehigh Early Strength Cement will save you time and cut production costs.

LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA.

LEHIGH EARLY STRENGTH CEMENT
LEHIGH MORTAR CEMENT
LEHIGH PORTLAND CEMENT
LEHIGH AIR-ENTRAINING CEMENT

PRESTRESSED CONCRETE DESIGN SAVES FLORIDA TAXPAYERS 10%.

One of two bridges crossing St. Lucie and Indian Rivers in Martin County, Florida, erected by Cleary Bros. Construction Company. The prestressed concrete design saved Florida taxpayers 10% over other alternates.

Casting yard of Juno Prestressors, Inc. a subsidiary of Cleary Brothers Construction Company, West Palm Beach, Florida. Ready mixed concrete supplied by Rinker-Riviera Company, Riviera Beach, Florida.

Pretensioned beam being placed. Beams are 47' 3" long, 3' deep. They measure 12" at the top, 18" at the bottom. Web is 6" thick. Piling is 20"x 20". Both beams and piles were made with Lehigh Early Strength Cement.

YOU AND PUBLIC RELATIONS

"PUBLIC relations" is one of those all-inclusive terms which means many things to many people. Webster's defines it as "the activities of a company or other organization in building and maintaining sound and productive relations with special publics such as customers, employees, stockholders or the public at large so as to adapt itself to its environment and interpret itself to society."

A simpler way of putting it is just to say, "Public relations (P.R. for short) is doing what's right and letting other people know about it."

To develop and carry out their public relations program, many companies hire men and women to study public attitudes, help management develop sound policies, and then execute a program of action to earn public understanding and acceptance.

However, whether he realizes it or not, every employee is identified with his company in the eyes of the public. People with whom you come in contact form their own opinions about your company and its product or services by listening to you or watching you.

In short, how you dress, how you act, the way you keep your home, your car, how you drive, how you speak about your job—all these things are noticed and remembered. They help to form the public's impression of you as an individual and its impression of the company for which you work. If that impression is favorable, you both benefit.

Modern companies try to earn and win the liking and respect plus the co-operation of people in the towns and communities where they operate. Being a good neighbor is an important branch of P.R. called community relations. However, any company will have a tough time succeeding in its community relations program unless the employees themselves are good neighbors and good citizens.

Good community relations can be achieved by the work of groups as well as that of individuals. Take the employees of the fictitious A-1 Block Company, for example. Every year they go over the top of their plant quota in the community fund campaign and on bloodmobile visits. "You can always count on the people at A-1," citizens of their town say.

Or consider the men at the Nonebetter Concrete Products Company, who have a bowling team in the city league. They don't always win the championship, but they usually end near the top. They always show up for scheduled games; they are hard players and good sports. "That team from Nonebetter Concrete—they're good guys," is the verdict of spectators and other players in the league.

Taken separately, good single impressions like these may not seem to be very important. But considered day in and day out over the years, these impressions add up to a priceless treasure of good will, with everyone thinking favorably of a company, its product, and its people.

If your job requires you to meet customers, contractors, or architects, you have one of the most important of all uses for P.R. Pleasing a customer takes plenty of skill. It's a combination of such factors as being well groomed and courteous, cheerful, obliging, and sufficiently informed about your company and its products to make a convincing sales talk and to answer questions intelligently. Even the way you drive a company car or a truck has a bearing on the name of your company. So also does the appearance and condition of company trucks.

Perhaps you have a chance to use other P.R. tools such as telephone calls and letters on your job. You can make or lose friends for your company with your voice alone. Most of the good P.R. habits available in personal contacts can be used skillfully when you telephone: courtesy, promptness, and helpfulness. Even a smile can be sent over a wire. Your listener may not see it, but he knows it's there.

Letters, too, are your company's ambassadors. They can make either a good or bad impression on the people who read them. Books have been written on the subject of business letters—how to write them so that they will sell products and win friends. But the world's cleverest piece of "letter salesmanship" will be weakened if it is sloppily typed, or if names are misspelled.

Obviously you have a stake in good personal public relations. When your company stands high in the opinion of its community, its customers and others, you can take more pride in being identified with it, and your own job will be more satisfying. In addition, the security of your job and your own personal advancement and satisfaction are directly affected.

Remember, good public relations is you. Let's all pitch in and become expert ambassadors of good will, not only for our own company but for the whole concrete industry as well.

(*Distributed by The National Concrete Masonry Association as Promotion Bulletin No. 53.*)

COAST-TO-COAST offices provide

PROMPT SERVICE

on Economy Forms

Rent Economy Steel Forms for your concrete construction and get:

- Overnight service almost anywhere in U. S.
- Saves time, material, money.
- Complete supervisory service.
- Form erection drawings.

Other forms from Economy are available on a purchase basis.

Write nearest office for catalog.

Economy Forms Corp.

DES MOINES, IOWA

Offices in St. Louis, Mo.; Kansas City, Mo.; Lincoln, Nebr.; Minneapolis, Minn.; Ft. Wayne, Ind.; Milwaukee, Wis.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Metuchen, N. J.; Rochester, N. Y.; Springfield, Mass.; New York, N. Y.; Washington, D. C.; Decatur, Ga.; Charlotte, N. C.; Dallas, Texas; Tulsa, Okla.; Houston, Texas; Los Angeles, Cal.; Oakland, Cal.; Denver, Colo.

27 San Francisco Drivers Presented Safety Awards

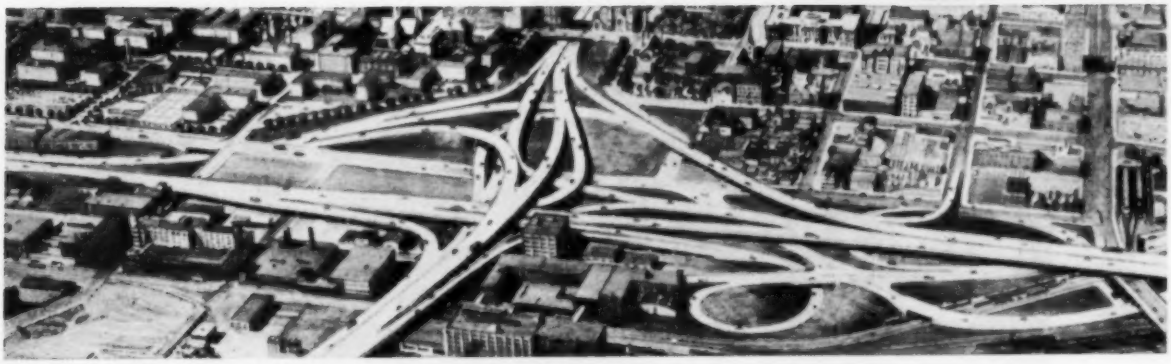
At a banquet given in their honor recently 27 truck drivers of Pacific Cement and Aggregates, Inc., San Francisco, were presented with safe driving awards. Special commendation went to Ralph Anderson, Ernest Chavez, A. L. Johnson, Louis Lombardi, and Frank Smith, all having 6-year safe driving records, and Vincent Giacomino and George Walrath, who had 5-year records.

Presentations were made by Donald Meek, senior vice-president of the firm, who stated that the awards were based upon the rules of the National Safety Council. Pacific Cement and Aggregates produces ready-mix, cement, sand, gravel, and crushed stone.

a great NEW mixer

ENGINEERED for tomorrow's "INSPECTION" TYPE concrete

the truck mixer of tomorrow, available now
built especially for low slump concrete
fastest charging and discharging
carries up to agitator
loads without a door



here's why

LARGER DISCHARGE OPENING... free-flow charging and discharging even with 0" slump concrete.

SHORTER, BIG DIAMETER DRUM... faster, thorough mixing and better weight distribution.

SMITH QUALITY... research, design and manufacturing combined to give long life, low maintenance and superb mixer performance.

Designed to handle the most critical mix under the most adverse conditions of charging, discharging and length of haul.

Choice of sizes... 4½, 5½, 6½ yards.

Front pto... or *Separate engine drive.*

Write direct for details.

SMITH

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

THE T. L. SMITH COMPANY • Milwaukee 1, Wisconsin • Lufkin, Texas

affiliated with Essick Manufacturing Company, Los Angeles, California.

A-4009-1P

OTHER GOCORP PRODUCTS

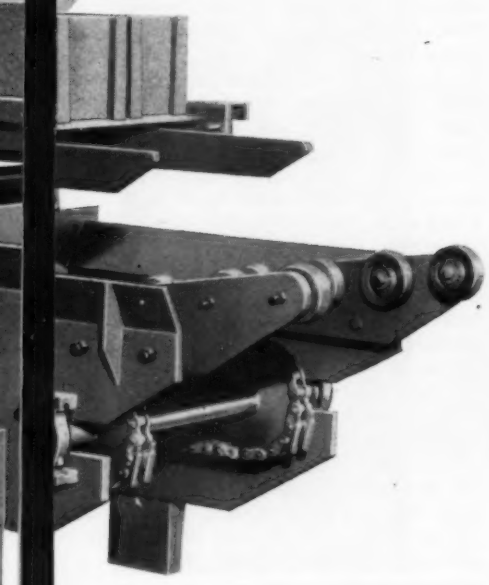
"Junior" and "Junior Twin" (cored pallet), "Senior" and "King" Block Machines. Mixers and Skip Loaders.

The "Three-at-a-time" Trustee models will accommodate the molds and attachments that many of you now own.

GOCORP

TRUSTEE BLOCK MACHINES

FOUR MODELS—$14,000 to $40,000



GOCORP believes these to be the finest block machines ever offered the industry. Designed and built by the men who have been largely responsible for the development of such basic improvements as:

- Packing by Vibration—High Production
- Feed Drawer Agitators—Both Rotary and Grid types
- Front Pallet Feeding and Magnetic Offbearers
- Height and Density Controls
- Mechanical Rack Loaders—The GOCORP "RACKMAN"

Measured by any yardstick—Quality of Block Produced • Rate of Production • First Cost • Maintenance Costs • Massive Construction • Obsolescence Factor —The TRUSTEE excels.

Let us tell you the details—and where you can see the one nearest you. Your inquiries will receive careful attention—by mail or personal call, as you prefer.

Reserved for you Your copy of the new TRUSTEE brochure. Send in your request now.

See you IN BOOTH "D"
N.C.M.A. SHOW—FEB. 25-28
Kiel Aud.—St. Louis

GO CORP
ADRIAN-MICH.
454 Grace Street Adrian, Michigan

WASTE

The Why of Accident Prevention

By HENRY C. QUARITIUS, JR.

President, Nailable Cinder Block Corp. - Chairman, N.C.M.A. Accident Prevention Committee

Every plant owner who has ever initiated a plant accident prevention program had some special, motivating reason for doing it. Some owners started plant safety programs because of their insurance carrier. Their accident rate had reached such proportions that the insurance company no longer considered them a satisfactory risk, and it was a matter of reducing the number of accidents, or else! This is a positive though unpleasant reason for starting a plant safety program. The situation was not so acute at our plant. We started our accident prevention program to eliminate *waste*.

Generally, it is difficult for the owner in whose plant there is an occasional accident to see any good reason for devoting much of his own time to plant safety. Workmen's compensation insurance premiums are just one entry in the expenditure column of his ledger. So long as total expenditures remain less than revenue, his operation shows a profit. A reduction in insurance costs would be desirable, but so would a reduction in any cost item. Compared to taxes, workmen's compensation insurance is a rather small item.

Two facts are overlooked by this owner. High workmen's compensation insurance payments are not just another cost of doing business. To pay excessive premiums because of a high accident rate is pure waste. It is exactly the same as the waste that would be incurred if a mixer operator *accidently* forgot the cement in a batch of concrete.

An analysis will show that the cost of workmen's compensation is only a small portion of the total waste resulting from a plant accident. Consider the following losses which are directly due to a plant accident:

1. The cost of repairing damage done to equipment involved in an accident. Waste here can be great, especially when trucks or other moving vehicles are involved in the accident.

2. The wasted quantities of raw materials and/or finished salable products damaged or lost through an accident. Damages from this type of loss are frequently greater than the cost of the material alone. Failure to deliver needed block to a client because of a plant accident certainly doesn't build good will. There is also the loss of production whenever raw materials are delayed in their arrival at plant locations because of an accident.

3. Productive time lost by persons in the general vicinity of an accident. Some of this lost time is taken for care of injured, while a greater portion of it is wasted by onlookers.

4. Lost production, as accident waste, when a trained employee is absent from his assigned task because of any injury. Sometimes injuries are slight enough so that the employee can remain on the job, but his efficiency is lowered.

5. The money wasted in the original training of an employee who can no longer work because of a disabling injury, or the cost necessitated in training an injured man's replacement.

6. The time consumed by clerks, foremen, and management in filling out report forms concerning an accident.

All of the above items are examples of direct waste due to plant accidents. Other kinds of waste are less tangible, but are noticeably absent from the plant having an active safety program. A safe plant generally has a high production efficiency. We have not had a single lost time accident in the last year. There is a feeling of team spirit between employees and management, and the frequency of labor turnover is reduced.

Any plant owner who will give this matter sufficient thought must arrive at the conclusion that accidents are just pure waste and as such warrant immediate attention.

This article was circulated by the National Concrete Masonry Association as Bulletin No. 11.

Highway Research

(*From page* 314)

standard H20 S16 (36-ton gross weight) 2 truck loading, for which it was designed, and a subsequent 100,000 repetitions of 54 percent design overload. The beam was 38 ft. long, 36 in. wide and 21 in. deep, and contained forty 5/16-in. diameter strands of seven wires with a total steel area of 2.25 sq. in. per beam. Seven static tests, each with loads ranging from 0 to 100 percent design overload, and six more with 0 to 410 percent design load, were made concurrently with the repetitive load tests.

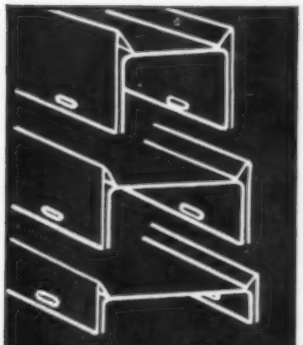
The beam proved to be structurally sound and entirely satisfactory for its use as a highway bridge member for a lifetime of service in a most severe location. The tests confirm the adequacy of the methods of analysis to predict beam behavior. The tests were made at Lehigh University during the period August 1952 to February 1953 as part of a program, which since 1951, has included tests on a post-tensioned beam, field tests of a bridge with analytical studies on the lateral load distribution, and bond studies of various size strands.

Expanded Shale as an Admixture in Lime Stabilization— by Raymond F. Dawson, University of Texas, and Chester McDowell, Texas Highway Department. Results of the use of dust from expanded shale aggregate as an admixture in lime stabilization are given. The pozzolanic action between lime and volcanic ash or flyash has long been known. Other materials when combined with lime will produce a similar action, but the investigation of these other has been limited. The effect of expanded shale and the unburned raw materials on the compressive strength of the mixtures is given, as well as a limited amount of data on the variation of the quantities of the expanded shale dust. In general, the results show considerable increase in the strength of the lime stabilized mixtures for two different aggregates, one having a high clay content, and the other being a sandy gravel.

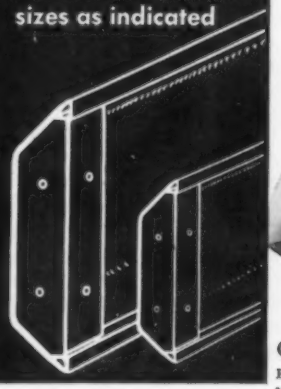
The Dalles Block Company, Dalles, Oreg., has been purchased by Howard Anson. Production of lightweight concrete blocks will be resumed under its new name, The Dalles Material Company, Inc. Mr. Anson is general manager of the newly-organized firm, and E. L. McJunkin, former owner, will act as production superintendent.

Invest in only 4 sets of basic FORM-CRETE I-Beam steel forms...

PROFITABLY produce 30 different sizes of standard pre-stressed concrete I-Beams . . .



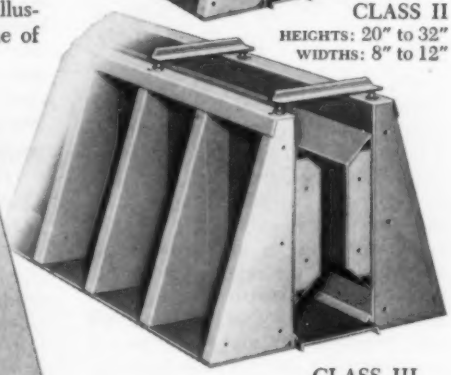
Interchangeable pilot liners and material displacement inserts are fabricated for each Class to produce all product sizes as indicated



Side forms, inserts and pilot liners in all four classes are fabricated in 10-foot lengths for most efficient casting operations. Specially designed tie bar assemblies (adjustable to two or three casting positions for required widths) hold top of forms firmly in place for accurate casting. Bottoms of forms and pilot liners are locked in position by specially designed Panel lock bars and wedges to provide uniformly smooth pre-stressed I-beams that will meet the most rigid specifications. Prefabricated pre-stressed concrete construction is sweeping the country because of lowered construction costs when used. Architects everywhere are specifying it. Get into this lucrative market now—send for our descriptive, fully illustrated bulletin showing the complete line of Form-crete steel forms—write today!

CLASS I
HEIGHTS: 12" to 20"
WIDTHS: 6" to 10"

CLASS II
HEIGHTS: 20" to 32"
WIDTHS: 8" to 12"



CLASS III
HEIGHTS: 36" to 48"
WIDTHS: 14" to 18"

CLASS IV
HEIGHTS: 52" to 64"
WIDTHS: 20" to 24"

SEND FOR **FORM-CRETE BULLETIN 200** PF-6

See Forms at the Road Show Booth 88, Avenue G

FOOD MACHINERY
AND CHEMICAL CORPORATION
FLORIDA DIVISION
LAKELAND, FLORIDA

FORM-CRETE STEEL FORMS FOR CASTING REINFORCED OR PRESTRESSED CONCRETE

DOUBLE "T" SLABS | SINGLE "T" JOISTS | HOLLOW AND SOLID LINTELS | SQUARE AND OCTAGONAL PILING | BRIDGE BEAMS | PAN TYPE BRIDGE DECKS

Rx Ready Mix

By HARRY F. THOMSON
Consulting Engineer, St. Louis, Mo.

More Imagineering Needed

IN a recent article in this column "imagineering" was described as the application of imagination to problems of engineering new or improved methods. A better way of doing something we have been accustomed to doing may result from such an independent approach. Too frequently we are prone to feel satisfied with equipment and operations with which we are familiar, without asking, "Is this necessary"? A typical example occurred in the early days of automobiles, then known as "horseless carriages"; the first engine-driven vehicles were equipped with whip-sockets, the same as buggies and surreys!

The need for continual thinking about possible improvements in equipment and methods applies as well to the production of ready-mixed concrete. Although it is a young industry which has grown from a few scattered efforts to the present multimillion-cubic yard volume in the span of a single generation, some producers may feel that as ready-mix became accepted by the construction industry, it also became static in its operating methods. Such an attitude has no place in American industry; as time marches on, the current methods and requirements may be expected to change. So we can turn to imagineering.

Weighing Cement A vexing problem, especially for many plants with batching equipment more than three years old, is the growing trend among specification writers to require that cement be weighed on a separate scale, i.e., independent of the scale for weighing aggregates. Many state highway departments are making this requirement at present, or have announced a deadline when separate weighing of cement will be mandatory. The complaint has been that many plants equipped with a single scale for weighing cumulatively the two aggregates and the cement, even with separate beams for each material, commonly weigh the cement last; and that in such cases any overrun in weighing the aggregates will usually result in reducing the weight of cement by the same amount. Much of the variation in the cement content in concrete from such plants has been charged to cumulative weighing. One correction which has been suggested is the introduction of interlocks to prevent overweighing; but that would add complications to the plant. An owner who is considering a new plant or a major improvement of an existing plant would do well to include a separate scale and weigh hopper for measuring cement independently of the aggregates. In addition to meeting probable future requirements to handle important jobs, a more accurate weighing of cement would be insured which might well pay for the cost of the separate batching equipment in a short time.

Water Tanks The whole question of water tanks on mixer trucks appears to warrant additional attention from both the producer and the mixer manufacturer. A growing number of producers are finding it advantageous to batch the mixing water into the mixer at the plant, along with the other materials. The water measurement is thereby placed in the hands of supervised plant personnel. Moreover, the measurement by weight, volume, or automatic meter should be more accurate than proportioning from the mixer water tank. Considering the current emphasis on equipment weights, the elimination of the mixing-water tanks would be helpful. It would appear that more producers will adopt this practice.

Adding Water At the Job As it is almost a fetish of most job superintendents to want to adjust the water content of a load, it will probably continue to be necessary for the truck to carry a nominal quantity of water for possible adjustment of the batch. However, a device is needed to admit only the quantity of the additional water which may be ordered. That is, if an additional 10 gal. is needed, there should be an accurate device for measuring that quantity. It often happens when a driver is instructed to add a certain amount, that he is careless in judging the meniscus in the gauge glass. The first manufacturer to offer such a device will make a contribution to progress.

Water Pumps With reference to introducing water from the truck equipment, the question of the necessity of the usual water pump might be asked. The pump together with the attendant clutch and valves in the conventional assembly, involve a substantial weight and also a maintenance problem, especially in winter. As the water is carried in a closed tank, it might be forced into the drum by air. As most ready-mix trucks are now equipped with air-brakes, it appears that with a larger compressor and a receiver, the same air equipment could handle the water problem. Such an arrangement has been used with satisfaction by some producers.

Mixer Design A mixer is intended to mix concrete, but how well does it perform? Various manufacturers have undoubtedly given great attention to the shape of the drum and to the arrangement, shape, and depth of the blades. As one moves about the country, he cannot fail to notice a great diversity in the shape of ready-mix drums—some are long cylinders set at an angle, some are double units with a short cylindrical section between; others are practically single cones, with the raised small end at the rear; and some have a much steeper underside angle than others.

A similar diversity undoubtedly applies to the blades in the drum. They can't all mix with equal effectiveness; some mixers, for instance, present a difficulty in discharging low-slump concrete. Are there some underlying relationships between length, diameter, angle of slope, depth of dished front end, and diameter of open rear end which should apply to the ideal mixer drum? Should such factors be considered by the ordinary producer in

purchasing mixer equipment? Possibly some impartial experimenting is indicated.

Blade Wear It is only natural that the edges of blades in mixer-drums wear down from abrasion. This wear reduces the area of the blades and thus lowers mixing efficiency. Some specifications prohibit the use of mixers with "worn blades"—but without defining the amount of wear which is objectionable. It would appear that the ready-mix industry needs some basis for determining at what point blades are sufficiently worn to require being rebuilt to their original size or replaced.

Testing Presently accepted methods of obtaining tests for verifying compliance with specifications may undergo important changes. As competition grows in many areas, there may be a trend toward watching the cement content of mixes more closely. When concrete is sold on a strength basis, more compression tests may be in order for the information of the producer, as well as for the customer and the owner. For large companies this may lead to the installation of their own compression testing equipment as an adjunct of their "quality control" service. Several important companies are now operating test trucks which obtain cylinders from deliveries to various jobs daily. Also, producers in communities which do not have local commercial laboratories may find it desirable to have their own testing facilities. Such equipment obviates shipping specimens to other cities and accepting the delays and uncertainties of tests on cylinders which may have been damaged en route, others which have not been subject to standard conditions during the period between casting and crushing.

There has always been an understandable desire to check on the cement content actually present in concrete. Plastic chemical analysis is not satisfactory because of the time required and because certain assumptions must be made as to the composition of the cement itself. The so-called Dunnagan test has been available for some years; but as it depends on wet sieving, the results may be dubious if dust, fine sand, or other particles similar in size to cement grains are present. A recently proposed method, however, referred to as the Willis-Hymus test, may prove helpful in determining cement content. In this test a weighed quantity of the dried solids in the mortar is mixed with a heavy liquid of suitable density and then centrifuged; as the cement has higher specific gravity than the sand, it collects in the outer end of the centrifuge tubes. It is understood that this new method is being investigated by the A.S.T.M. committee on concrete and aggregates.

Another type of test which may receive greater attention from ready-mix men than heretofore, is the beam test for flexural strength of concrete. This test is not new, but is used extensively by highway departments as it practically simulates the beam action of pavement slabs under wheel loads. As there is prospect of extensive use of ready-mix in the new federal highway construction, it is probable that numerous producers will be brought face-to-face with the various factors which influence the results of tests of flexural strength.

Cement Uniformity All ready-mix operations are dependent on Portland cement. We like to think of Type I cement of any given brand as a uniform product, day in and day out, month after month. When furnishing guaranteed strength concrete, a producer relies heavily on the cement having uniform strength properties. However, in response to reports from some producers that their field experience indicated a lack of uniformity, the laboratory of the National Ready Mixed Concrete Association has undertaken a carefully supervised series of strength tests of cement samples from each of five widely separated sources secured from commercial shipments at 2-week intervals. It is somewhat disturbing to note that a progress report summarizing the results for 14 samples of each cement showed an overall spread in mortar strength for one cement averaging 36 percent for ages 3, 7, and 28 days. The smallest spread for any of the five brands was 19 percent. Such ranges do not indicate the uniformity of strength properties for any given Type I cement on which ready-mix producers depend for furnishing uniform concrete.

Type I Specification It might be mentioned that there has been no radical stiffening of the specifications requirements for Type I cement (A.S.T.M. designation C 150) since 1941, although there have been minor changes from time to time, the last in 1955. In general, the properties of Type I on the market have been so much better than the minima expressed in C 150 that the specification has become almost a dead letter. Possibly the time has about arrived when a complete revaluation of C 150 will be in order. Such a review, in the light of recent field and laboratory experience, may well result in a great improvement in uniformity or strength properties, and without any great increase in the cost of manufacture. At least one voice has been heard regarding the "Cement and Concrete of the Future." The voice was that of J. C. Witt, consultant and specialist in cement production, who has developed a process which he feels will lead to substantially greater uniformity in quality of clinker, and consequently a more uniform cement than heretofore.

Type I.P. Cement In the not distant future leaders in the concrete industry may expect to hear more about another type of cement, described as Portland-Pozzolan, identified as Type I. P. It is substantially a blend of regular portland and an approved pozzolan, the proportion of the latter being from 15 to 50 percent by weight of the final cement. The pozzolan may be either natural, such as certain pumicites and volcanic ashes, or artificial, such as fly ash. Portland-Pozzolan cement has been produced for certain uses, such as structures immersed in sea water, especially on the Pacific Coast. But with the growing recognition of the properties contributed to concrete by the presence of a suitable Pozzolan*, there appears the prospect that Type I.P. cement may become another regular product of some manufacturers who may have readily available a suitable pozzolan material.

Personnel A growing interest in having specially qualified personnel supervise the design and production of ready-mix is to be anticipated. The day of allowing any operating engineer who reports to the plant to mix 1-2-4 or 3,000 lb. concrete according to his own notion is fast passing, even in small plants. More and more producers are taking advantage of the many "short courses" being offered by the National Ready Mixed Concrete Association at Washington, by local associations, or by universities, to inform their personnel as to "what it is all about."

*See *Rx Ready Mix*, PIT AND QUARRY, January and February, 1956.

Facilities for obtaining instruction as to the characteristics of ingredients and concrete are available to all who really want to be informed. We probably cannot look in the near future for any general system of inspection of plant and personnel, much as might be desirable; nor can we look for state or city licensing of plant operations as it now applies to plumbers, electricians, stationary engineers, and some others, because the number in any community will continue to be small. But the producers themselves will raise the prestige of ready-mix and confidence in its use by providing specially qualified men to design and supervise their production. The millenium in this respect may not be at hand, but the average of reliability of the plants in any community should steadily advance.

The foregoing remarks and the companion article in this column in the December issue of THE CONCRETE MANUFACTURER discuss some of the points which thinking in terms of imagineering bring to mind. It is to be expected that the ready-mix industry will not stand still as regards equipment and methods of operation, and that some of the improvements suggested will come into use in due time.

OWN YOUR OWN PLANT

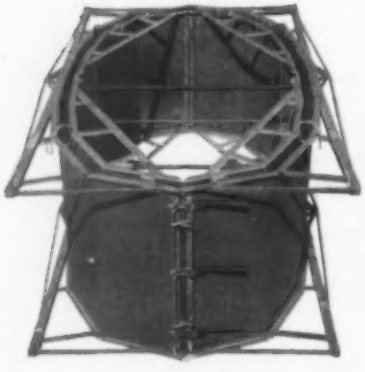
and Produce

Better Septic Tanks

Profit by owning your own business and gain benefits from a Nationally-known organization.

YOU can produce the "patented" Philip Sitton Septic Tank with a protected territory under the SITTON Licensing Plan.

You SAVE in—Concrete • Labor • Time
— and still produce a *stronger* and *efficient* septic tank.



THESE PATENTED
STEEL FORMS
CAN BE ASSEMBLED
OR REMOVED
IN *LESS* THAN 15 MINUTES

We custom-build forms to comply with FHA, VA, State and County Boards of Health.

EXTREMELY VERSATILE
One combination SITTON form will build a 1000, 800 or 600 gallon tank—and multi-compartment tanks.

Write for particulars on the SITTON Licensing Plan and available territory.

80 dealers in 16 states.

The PHILIP SITTON SEPTIC TANK COMPANY
INCORPORATED

709-11-13 N. Euclid Ave. • P. O. Box 2228 • Dayton 7, Ohio

South Carolina Masonry Assn. Elects Officers at Convention

At the annual convention of the South Carolina Concrete Masonry Association, held last December in Columbia, Henry L. Saltonstall of the Tidewater Concrete Block and Pipe Company, Charleston, S. C., was named chairman of the board. Mr. Saltonstall was president of the association last year.

Other officers elected at the convention were Heyward Ballard, Greenville, president; R. D. Wilson, Chester, secretary-treasurer; H. A. McGee, Orangeburg, vice-president.

Anthony Co. of Streator, Ill. Acquires Truck Crane, Inc.

B. G. Kaplan, chairman of the board, and Frank C. McManus, president of the Anthony Company, Streator, Ill., have announced that this firm has completed negotiations for the purchase of truck Crane, Incorporated, Chicago, Ill.

Plans call for the transfer of all manufacturing, sales, and service functions to the main plant at Streator. Sales distribution will be through Anthony's national distributor organization, as well as to foreign markets through overseas affiliate manufacturing plans and regular export outlet.

Two Eastern Firms Acquired By Toledo Scale Company

The Toledo Scale Company, Toledo, Ohio, has acquired the Scientific Concrete Service Corporation of Elizabeth, N. J., and the Metrogram Corporation of Burlington, Vt. Both businesses will be moved to Toledo Scale Company's main plant at Toledo.

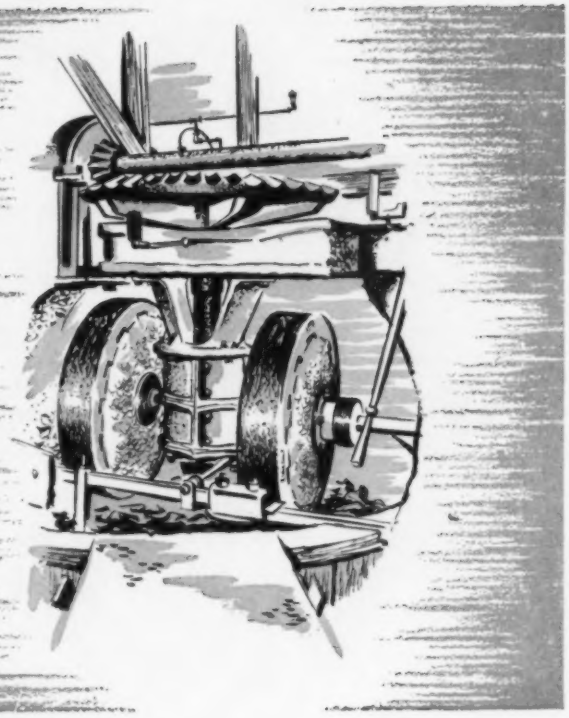
Scientific Concrete Service supplies equipment and technical consultation to the concrete industry. For many years it has used Toledo scales for moisture and quality control methods in concrete batching.

Metrogram makes small scales and package classifying equipment.

The Gopher Stone & Brick Company, Inc., Minneapolis, Minn., has purchased the Capitol City Stone Company, St. Paul. Capitol's facilities are being expanded to serve Gopher Stone's St. Paul customers.

The cost of concrete block has increased by only 20 percent in the last 20 years, according to the National Concrete Masonry Association.

Over 50 Years of Service And Still Going Strong . . .



A pair of American 9-foot dry pan grinders have been working day in and day out . . . year in and year out . . . for Whiteselle Brick & Lumber Company at Corsicana, Texas, since shortly after the turn of the century. Company officials estimate that these grand old troopers have ground material for more than 450 million brick so far . . . and both seem to have years of useful service left in them.

Today . . . as 50 years ago when they were new . . . they are handling nine yards of shale and clay per hour, working 9 hours a day and five days a week.

"The service record of these grinders does the talking for American Clay machinery," said a company spokesman. "All we've had to replace have been the grinding tires and muller and screen plates."

In the American files are many similar case studies.

This same rugged construction and dependability is built into American grinders of today . . . plus modern design that means increased efficiency and bigger volume production. American offers a complete line of eight grinders ranging in capacity from 15 to 80 tons per hour. You owe it to yourself to get all the facts on American grinders before you buy. For a profitable consulation without obligation. . .

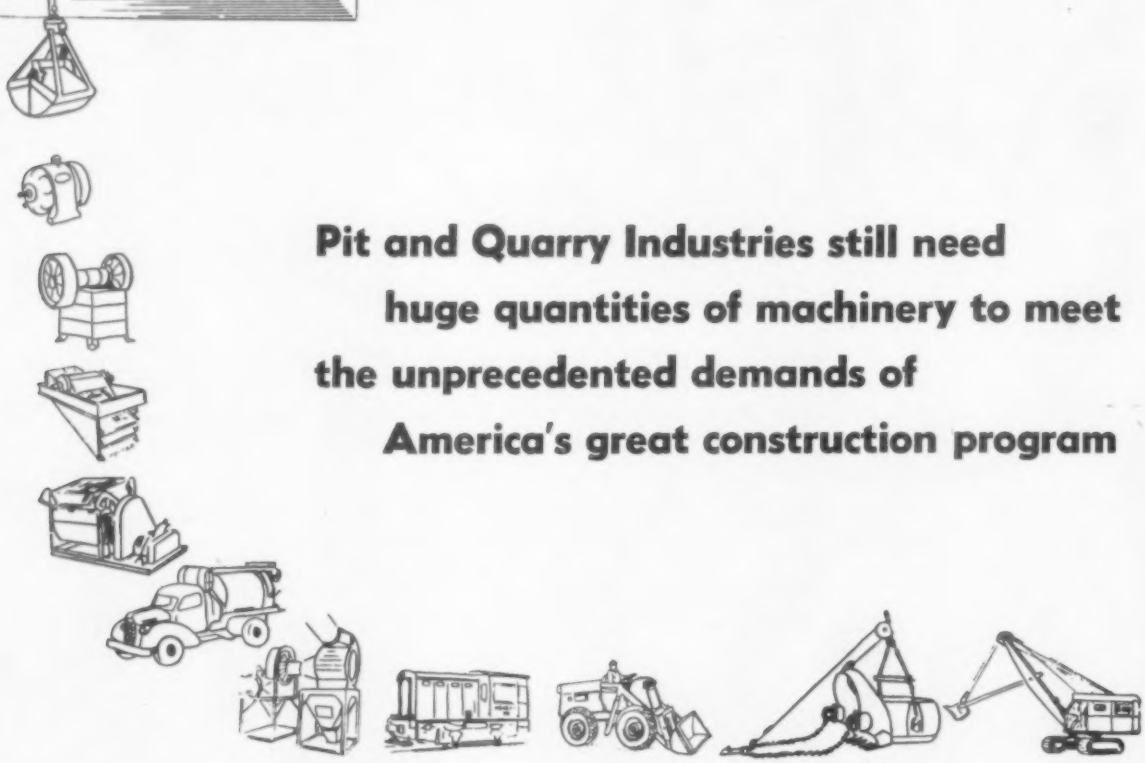
WRITE . . . WIRE . . . OR PHONE

American CLAY MACHINERY

A Division of HUBER-WARCO Company
Marion, Ohio, U. S. A.

PLANTS IN MARION AND BUCYRUS, OHIO • CABLE ADDRESS: HUBARCO
CLAY MACHINERY • GRINDERS • ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS

The leading publication read by
and serving producers in the
Cement, Crushed Stone, Sand and Gravel,
Lime, Gypsum, and others in the
Nonmetallic Mineral Field



Pit and Quarry Industries still need huge quantities of machinery to meet the unprecedented demands of America's great construction program

Write for more information
and current copies of

PIT and QUARRY

431 South Dearborn St., Chicago 5, Ill.

ABC BPA NBP

H-M Processing, Aggregate Selection Discussed at A.C.I. Meeting

IN papers presented at the ninth regional meeting of the American Concrete Institute, held in Montreal, October 24-27, two were of special interest to aggregate producers. These were entitled *Heavy Media Processing of Gravels in New Brunswick,* and *Selection of Concrete Aggregates for the St. Lawrence Seaway Locks.*

In the first of these addresses it was pointed out by I. D. MacKenzie, geologist for the Shawinigan Engineering Company, Ltd., Montreal, that some 200,000 cu. yd. of concrete will be required for the Beechwood development of the New Brunswick Electric Power Commission on the St. John River. Much of this concrete will be exposed to severe frost action during the winter, and some of the concrete must resist the erosive action of high-velocity flood discharge.

Examination of gravel deposits near the construction site indicated that there was too high a percentage of unsound, porous, and nondurable particles for the material to be classed as a top quality aggregate. It was found that the sand, as well as the gravel fraction, was unacceptable in freeze-thaw tests.

Since the nearest known source of igneous rock was several miles away and would have required setting up a quarry operation and crushing plant, efforts were directed toward methods of upgrading the quality of the gravel. The investigations that led to this decision and the plant set up were described by Mr. MacKenzie.

It was suspected, said Mr. MacKenzie, that the poor aggregates were the soft porous shales, mudstones, siltstones, porous sandstones, and other particles in the gravels that had a low specific gravity.

A trial separation by the heavy-media or sink-float process showed that the particles remaining after the lighter 15 to 20 percent of the material had been removed were resistant to freeze-thaw tests. Thus it was decided to process the plus ⅜-in. material and discard the sand fraction, due to difficulties in separating the fine materials. Sand for concrete was shipped in by rail.

The separation of materials by specific gravity is based on the introduction of the particles of mixed gravity to a suspension or a medium maintained at the specific gravity at which the separation is to take place. Particles that are lighter float like a piece of wood on water and the heavier particles sink like a stone in water.

The plant setup was as follows: after being excavated, the material passed over dry screens, which removed most of the sand. The gravel was then passed over a horizontal washing screen to remove adherent fines. Next the washed gravel was fed into the drum of the sink-float plant. The medium used in the plant was a suspension of ferro-silicon and magnetite in water. Lighter float particles were carried along on top of the flowing medium; sink material went to the bottom of the drum, where it was picked up by lifters. Both the processed gravel and waste material were washed under high-pressure water jets so that the ferro-silicon and magnetite could be recovered. The medium then was pumped to a magnetic separator, where the media was recovered and excess water and contaminants were discarded.

Production of finished aggregate was at the rate of nearly 80 t.p.h. Even with the cost of heavy-media separation, it was estimated that the coarse aggregate was obtained for less than half the cost of production from any other source.

Aggregate processing was also discussed by J. C. Kingston, concrete control engineer, The St. Lawrence Seaway Authority, Montreal, in his paper *Selection of Concrete Aggregates for the St. Lawrence Seaway Locks.* Seaway construction and aggregates also received attention from Ellis L. Armstrong and Harry H. McLean, assistant project manager and concrete engineer, respectively, Uhl, Hall & Rich, Massena, N.Y., in the report entitled *Concrete Control on the St. Lawrence Power Project.*

The work now being undertaken on the St. Lawrence Seaway consists of many millions of cubic yards of dredging, excavation, and dike construction, as well as the building of seven locks, two by the St. Lawrence Seaway Development Corporation in the United States and five by the St. Lawrence Seaway Authority in Canada.

Mr. Kingston described briefly the aggregate deposits and processing for the latter five locks. Aggregates for two of these are being processed from the excavation rubble; one is getting aggregates from a deposit near the construction site; and the remaining two are being furnished aggregates by regular suppliers from their well-established operating plants.

Of the construction currently being handled by the Power Authority of the State of New York, the four main concrete structures, with a combined concrete volume of 1,915,000 cu. yd., are supplied with aggregates from one source by one producer. The Power Authority work extends along 32 miles of the St. Lawrence River.

To meet the high-rate-demand requirement, the aggregate contractor installed a plant constructed around a 53 by 60-in. primary impact crusher. The entire plant is arranged in three stages — primary, secondary, tertiary—and any one stage can be operated independently of the other two. All reduction facilities are accompanied by closed circuits. Mr. McLean noted that the plant is extremely flexible.

The concrete plants for all the New York structures are automatic. One unusual feature required by specifications is that all plants be equipped with a finish screen on the top of the plant at the end of the conveyor from the stockpiles. In addition, all aggregate, except sand and ¾-in., must pass a rinsing screen at the bottom of the same belt. The rinsing screen and finish screen contribute greatly to uniformity in concrete control, according to Mr. McLean. They provide a means for correcting the usual faults from the result of stockpile degradation and contamination. In anticipation of moisture control difficulties, which did not completely develop, all plants are equipped with moisture control meters in the sand batchers.

Precasting to Prestressing

Rochester, N.Y., Firm's Conversion Typical of Modern Change

By ROY L. PECK

Another ON THE SPOT Report

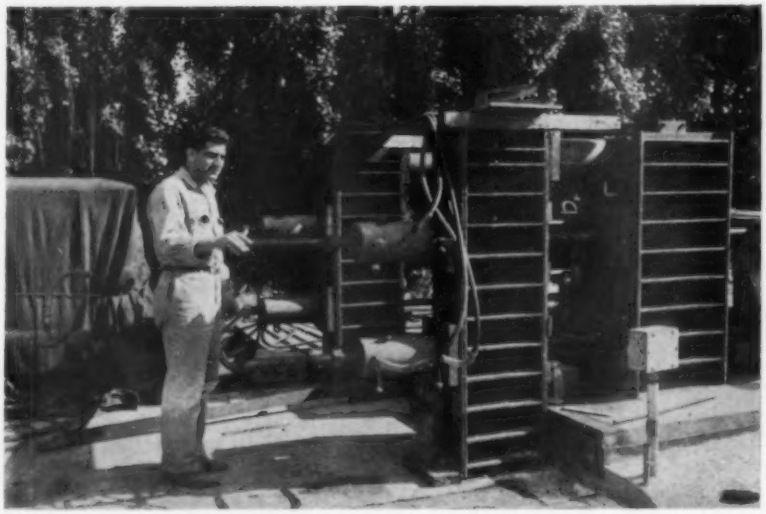
Goodstone Manufacturing Company has been one of the pioneer producers of precast concrete items in the northern New York State area for many years. The Masiello brothers, Vito and Julius, owners of the business, had acquired by long years of experience the basic techniques required for present production. The high-quality products of the firm—architectural cast stone, Mo-Sai mosaics, Channelcrete slabs, etc.—have been used in many prominent structures in the vicinity.

With this background, it was natural for the Masiellos to enter the new quality-concrete field of prestressing about a year ago. As the property afforded sufficient space for the installation of one prestressing bed and its appurtenant equipment, it was comparatively easy to accomplish the conversion. It is now planned to move the present prestressing forms and equipment to a new and larger site nearby, where concrete beds will be built to accommodate another set of forms. The present plant property has insufficient area available for this planned expansion.

Prior to the decision to engage in prestressing, a detailed study was made of the several systems of design which were then available, and shortly thereafter the firm became an affiliate of the Freyssinet Company of New York, N.Y. That company designed the prestressing bed and later provided design services to Goodstone to use in connection with future bids. William A. Clark, consulting engineer of Rochester, N.Y., also collaborates on designs for other more detailed projects.

One prestressing bed was installed —220 ft. in length and 10 ft. wide; it was designed for the production of double-T floor and roof slabs. As shown in the accompanying pictures, the top of this concrete bed is flat, so that the steel forms used for slabs can be shifted over to one side if it is desired to make a line of bridge beams or other members concur-

Above: The new prestressing bed, 220 ft. long and 10 ft. wide, recently installed at the plant of Goodstone Manufacturing Company, Rochester, N. Y. This end view shows the steel frames to which the strands are anchored.



Right: Dominick Masiello, vice-president of the company, inspects the tensioning equipment and heavy steel buttresses which sustain the prestressing forces.

rently. Completely independent sets of tensioning equipment are installed on each side of the bed. Spanning the 10-ft. bed is a special hold-down device for controlling the camber in forming prestressed double-T slabs and single-T joist beams.

This device is built of two 6-in. steel channels 10 ft. long, set back-to-back. Steel supporting jack posts 1-in. in diameter are installed at both ends of these channels, and brackets are set to hold in place a 10-ton Blackhawk jack, which provides the power. By depressing the strands and controlling their alignment in the forming of the section, the device creates cantilever overhang in the finished product, as well as a desirable "catenary effect." The strand depresser was designed and installed by company personnel.

Form-Crete semi-portable, all-steel double-T casting form assemblies made by the Food Machinery & Chemical Corporation are used. This varied and multiple-use assortment of forms fits into the design of the beds with the minimum of alteration or installation costs. It also offers maximum interchangeability throughout the entire size range for other types of prestressed concrete members, such as beam shapes, square and octagonal piling, etc. The form sections were furnished in 30-ft. lengths for ease and speed of installation.

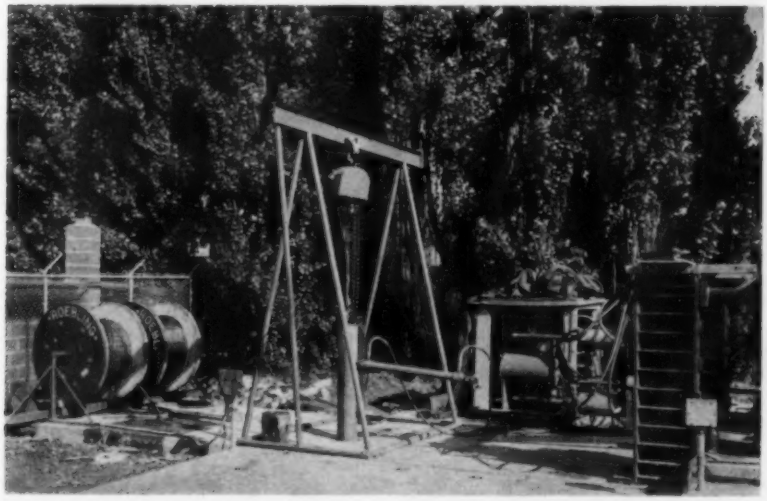
Seven-wire, uncoated, stress-relieved, high-tensile steel strands are used, furnished in reels by either Roebling or American Steel & Wire Company. Sizes of strand used to date have been ⅜- and 7/16-in. diameters for the prestressed members produced, but it is expected that ½-in. may prove beneficial for some of the jobs which are now being figured by the company. The Masiellos feel that there is a definite economy in using diameters of wire which cost less per lb. of pull and less to handle. The larger sizes also permit the use of larger aggregates and provide a greater concentration of prestressing force which can be used to increase the efficiency of design.

A simple reel-holding device installed at the end of the bed permits easy handling of the strand in placing it into position in the forms. The strands are placed in position and anchored by Reliable re-usable fittings at one of the bed, and to the tensioning device at the opposite end. Simplex hydraulic units, of 400-ton capacity, and an electric pump operating at 10,000 p.s.i., both made by Templeton, Kenly & Company, constitute the pre-tensioning equipment.

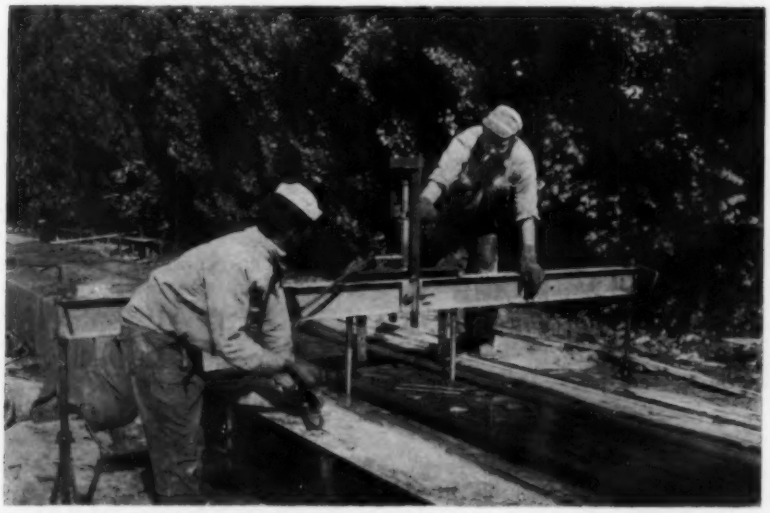
The Redman Company and the Baughman Company, Rochester producers of ready-mixed concrete, furnish the concrete used for prestressing. A mix of sand and gravel aggregates with 7½ sacks of Type I standard portland cement per cu. yd. of concrete, produced in excess of 4,000 p.s.i. strength after 18 hours of curing. The concrete is vibrated by means of Mall vibrators as it is being placed.

Goodstone has experimented with the use of both Pozzolith and Plastiment concrete densifying compounds, finding that both these admixtures contribute measurably in increasing the workability of the low-slump concrete, and that they are definite aids in obtaining the required concrete strength with the duration and type of curing followed. The steam used for curing comes from the plant steam generator through a 3-in. line to the two 1½-in. diameter steam pipes which are installed under the steam forms to provide the maximum of heat to the concrete. The top surface of the concrete is kept wet during the curing period. Heavy tarpaulins placed over the bed and tied in place prevent the escape of heat and also reduce the surface-moisture evaporation on the concrete surfaces.

As evidence of the immediate acceptance of the company's prestressed products, the following jobs were completed within the first year of operation: Greek Orthodox Church, Rochester, N.Y., in which over 25,000 sq. ft. of double-T floor and roof slabs were used; Lyell Rut-



Cable reels, the jack winch frame, and the tensioning devices at far end of bed.



The strand-depressing device used for controlling the camber and placing the center of the tendon in its most efficient position.

ter Corporation warehouse, Rochester, William Clark, engineer, requiring 8,000 sq. ft. of double-T roof slabs; Monroe Tree Surgeons warehouse, taking 5,000 sq. ft. of double-T slabs, columns, and girders; and the first bridge in Monroe County, a 66-ft. span cross-over in which 22-ft.-span beams of Freyssinet sections were used.

In Wyoming County, N.Y., eight bridge I-beams, 12 in. deep and 36 in. wide, spanning 22 ft., were furnished to the county department of highways. In production, these beams were cast at one time around the same set of pre-tensioned cables and were delivered to the job site 70 miles from the plant in two truckloads.

In the Units Parts Company job, over 30,000 sq. ft. of double-T's, precast columns and beams, and 84 ft.-span post-tensioned roof girders were installed. In this work the roof slabs were supported on the bottom flanges of the girders. Goodstone did all the erection of the structural members for the projects cited, except on the Wyoming County bridge.

Dominick Masiello, vice-president of the company, pointed out that they had made a number of different castings from the one form assembly now installed, by utilizing a variety of grout forms and stem heights. He mentioned various adaptations which have been produced, including single- and double-T floor and roof slabs, channel sections for floor and bridge construction, bleacher seats, and single-T joists as some of the prestressed members.

Precasting of cast stone, mosaics, Channelcrete slabs, etc., was the major activity of the company before conversion to prestressing.

While long-line forms are relatively high in initial cost, they are stoutly built and capable of producing a very large number of castings before wear or obsolescence renders them worthless.

Goodstone is endeavoring to sell standard items wherever possible, and finds that architects and engineers are inclined to use a standard section for economy in design and installation cost, if it can be built to take the loads to which it will be subjected.

Of Plants and People

Owners of Panhandle Pre-Mix, Moscow, Idaho, recently acquired Moscow Concrete, Inc., from G. H. Allison. The two concerns have been merged and will be operated under the name of the former. Both facilities will continue operations at their respective sites.

Vowell & Sons, Martin, Tenn., has completed plans to enter the ready-mixed concrete business. The firm expects to begin production of ready-mixed concrete by February 1.

The Anderson-Dunham Concrete Products Division, Baton Rouge, La., has been purchased by the Dolese Company, Oklahoma City, Okla. Anderson-Dunham has seven ready-mix concrete plants in the area from Burnside to Plaquemines and Baton Rouge. The Dolese Company operates ready-mixed concrete plants at Oklahoma City, Norman, and Enid, Okla.

Frank G. Louthan Jr. was elected vice-president of the Concrete Pipe and Products Company, Inc., Richmond, Va., at a recent meeting of the board of directors. Mr. Louthan has been with the firm since 1950. Raymond E. Miles, who also joined the firm in 1950, was elected comptroller and assistant secretary.

Walter R. Schaefer has been named sales manager of the Cleveland office of the Geo. Rackle & Sons Company of Cleveland and Houston, Tex., producer of concrete roof and floor slabs.

Ralph B. White has rejoined the sales staff of the Concrete Building Units Company, Kansas City, Mo. He will specialize in the promotion of prestressed and precast concrete products. Mr. White has been identified with the building materials field in Missouri since 1936, and had been with Concrete Building Units from 1949 to 1953. He has also been associated with the United Brick & Tile Company and the Lusco Brick & Stone Company.

C.R.S.I. Design Handbook Issued in Revised Form

The *C.R.S.I. Design Handbook*, a revised manual published by the Concrete Reinforcing Steel Institute, Chicago, Ill., simplifies many of the problems in designing reinforced concrete structures. Designs are based upon the new 1956 A.C.I. Reinforced Concrete Building Code.

This new edition facilitates the selection of pre-designed reinforced concrete members from tables. Answers to complex stress and load problems are worked out in the manual.

Prepared under the direction of the Committee on Engineering Practice of the Concrete Reinforcing Steel Institute, the manual contains over 400 pages, and covers the following subjects: floor systems, beams, columns, footings, retaining walls, etc. A separate section contains miscellaneous tables and lists engineering diagrams and formulae.

The manual may be obtained for $6 a copy from the Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago 3, Ill.

New FWD-only sure way to guarantee delivery anywhere!

Every Ready-Mix fleet needs one or more FWDs. It's the only way to guarantee get-there service on the tough hauls! These rugged Ready-Mix specialists carry maximum loads through mud, sand or uneven terrain of construction-sites and spot the load right where you want it.

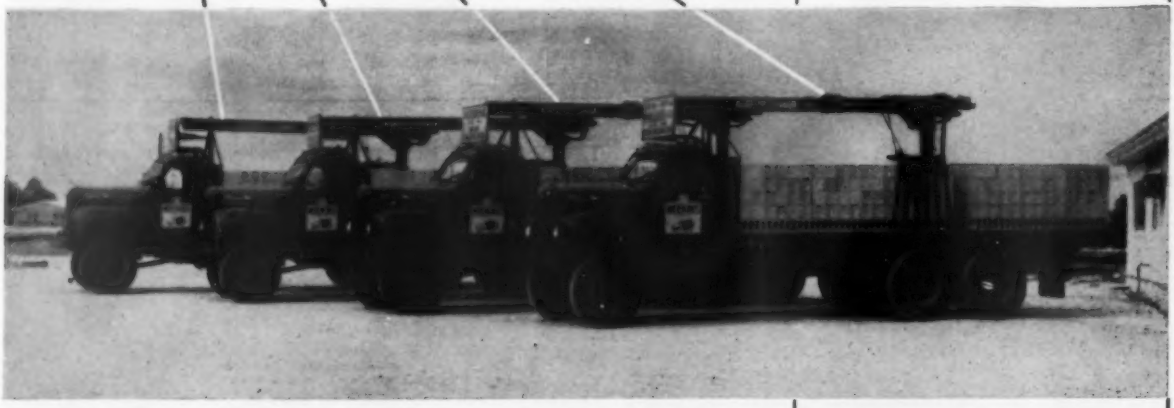
These aren't ordinary trucks. They have the unmatched power and traction that made FWD famous! This is full time 6-wheel drive with both power and weight proportioned between 3 live axles. For city deliveries they are snappy in traffic, easily maneuverable with power at every wheel. Haul bigger payloads and guarantee your deliveries with new FWDs built especially for the Ready-Mix market. Write for the facts today!

Heavy-Duty Vehicle Specialists

THE FOUR WHEEL DRIVE AUTO COMPANY • CLINTONVILLE, WISCONSIN • Canadian Factory: KITCHENER, ONTARIO

4 REASONS WHY...

MEEKINS INC. of Florida give the best block delivery service



4 SIDE-O-MATIC UNLOADERS *are now on the job . . . . . .*

Meekins, Inc., of Hollywood, Florida, a leader in the industry, tell us "There is no comparison between our Side-O-Matics and two other competitive makes of unloaders we have been using." They say, " . . . the Side-O-Matics excel in speed of unloading, ease of unloading on sloping terrain . . . no need for jockeying truck around in tight jobs as the entire load can be taken off from one position . . . keep labor turnover to a minimum and give better customer satisfaction."

Pat. Nos. 2,772,794 and 2,772,795

Write Today for full details

SIDE-O-MATIC UNLOADER CORP.

P. O. BOX 1561 YORK, PA.

Phone York 7357

PARTIAL LIST OF SATISFIED USERS

Bes-Block Concrete Products, Inc.
Jacksonville, Florida—3 units

Alico Concrete Products Co., Inc.
Patchogue, L. I., New York—2 units

The Ideal Builders Supply and Fuel Co.
Cleveland, Ohio—2 units

Binkley and Ober, Inc.
East Petersburg, Pa.—2 units

The Michigan Silo Company
Peoria, Illinois—2 units

Joseph M. Ripley, Inc.
Jacksonville, Florida—3 units

Carter's Concrete Block Plant
Monticello, Indiana

M. L. Daque Company
Muncie, Indiana

Pick's Pack-Hauler
Blue Hill, Neb.

The Fairlawn Supply & Coal Company
Akron, Ohio

Concrete Masonry Corporation
Elyria, Ohio—4 units

Fizzano Brothers, Inc.
Crum Lynne, Pennsylvania

Maule Industries, Inc.
Miami, Florida—2 units

Putnam Mason Supplies, Inc.
Carmel, New York

Peoria Concrete Construction Company
Peoria, Illinois

Nitterhouse Concrete Products
Chambersburg, Pennsylvania

Bestone Incorporated
Chardon, Ohio

The Plasticrete Corporation
New Haven, Connecticut—2 units

The Cleveland Builders Supply Co.
Cleveland, Ohio—3 units

Columbia Concrete Products Co.
Des Moines, Iowa

Park Avenue Cement Block Co., Inc.
Cranston, Rhode Island

Adolf Jandris and Sons, Inc.
Gardner, Massachusetts

Daggett's Concrete Products
South Haven, Michigan

Polyock Brothers
Zenda, Wisconsin

Atlas Concrete Products, Inc.
Flint, Michigan—2 units

David Concrete Products Company
Jacksonville, Florida—2 units

Carl Krebs
Fort Thomas, Kentucky

New Castle Duntile Company
New Castle, Pennsylvania

Foster Builders Supply Company
Port Huron, Michigan

Lima Cement Products Company
Lima, Ohio

Ready-Mixed Concrete

Northeast Leads in Production Gain

By ROY L. PECK

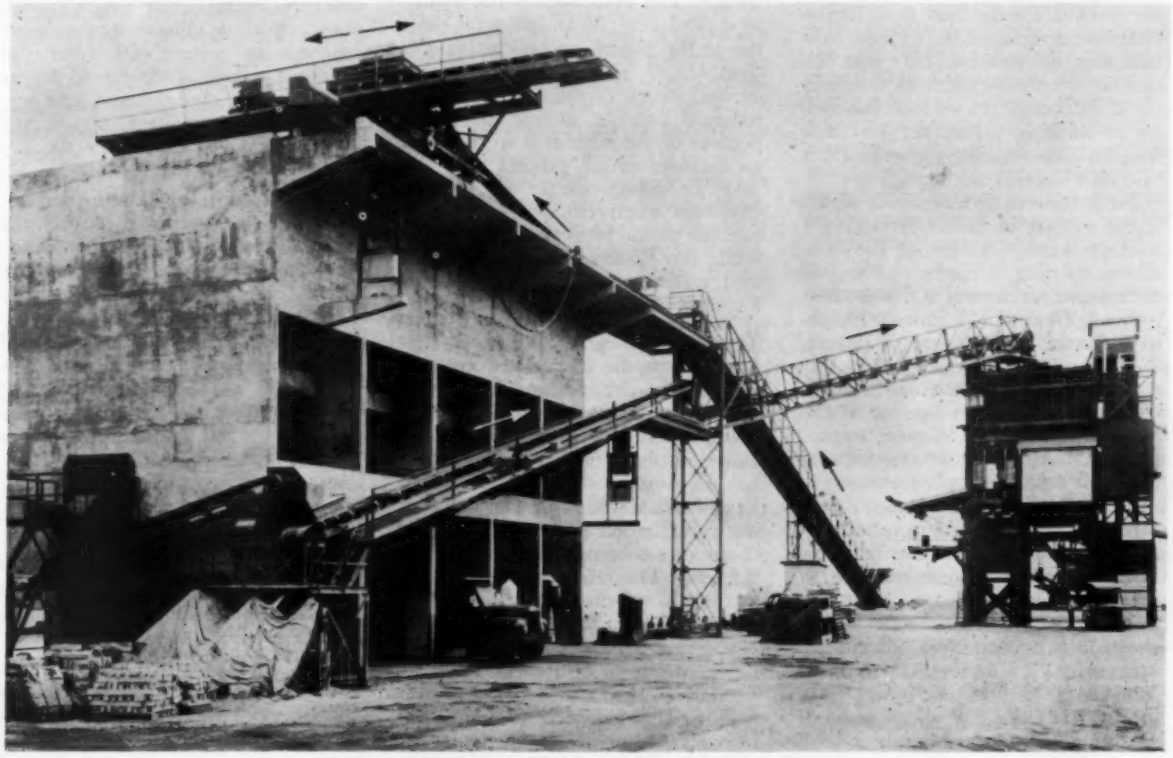
AFTER experiencing a decrease in production in 1955, the producers of ready-mix concrete in the Northeast section of the country came back last year to post a record of nearly 19 percent gain in their production, about double that of the national average. Several interesting trends were revealed by the returns from the questionnaires sent to producers in the closing months of 1956. These indicate clearly the changing character of the industry to conform with developments in greater mechanization of equipment, larger drum capacities, higher cement factors, and a growing appreciation of the need to co-operate with the newest segment of the concrete industry, prestressed concrete.

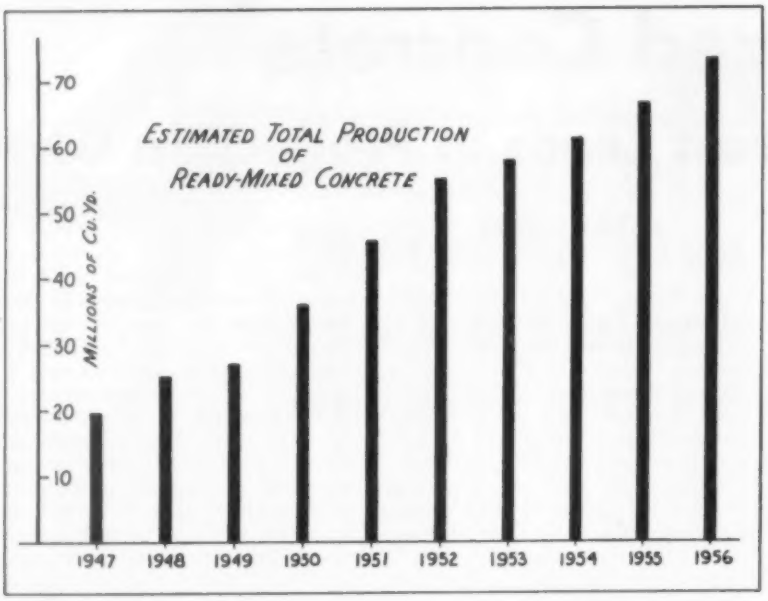
Production Volume From information contained in the questionnaire returns from representative companies reporting on their operations for the last three years—which checked quite closely with similar figures in past surveys—it is apparent that the ready-mixed concrete industry is now taking a third of the nation's available portland cement. With a reported average production increase of slightly over 10 percent of the 66,500,000 cu. yd. estimated to have been produced in 1955, the output in 1956 is conservatively placed at 73,300,000 cu. yd. The average cement factor is higher—1.41 bbl. per cu. yd.—than previously, resulting in the use of around 103,500,000 bbl. of cement. Much of this volume was used in ready-mix, although it appears evident that many companies have branched into associated businesses which would take some small part of the output reported.

As previously stated, neither a completely accurate survey or cross-section of the industry is possible today, except from the limited scope of the trade report issued by the Bureau of Census, Department of Commerce, belatedly received, covering the sales of ready-mix for 1954. Unfortunately, producers who were required to fill out the questionnaire of this bureau early in 1955 either were not required to submit figures on their physical production volume, or such data were not included in the report made public in June, 1956. It is only by direct reference to past data received from producers who reported on several years' operations that accurate estimates of volume can be drawn. The nearest approach to an overall survey of value is that conducted annually (since 1951) by the National Ready Mixed Concrete Association, which this year included returns from 1,344 companies, or 48 percent of those surveyed.

In any survey, the average size of the reporting companies will largely

Ready-mixed concrete plant of Evans, Coleman & Evans, Ltd., North Vancouver, B. C., showing flow of materials from bins to mixer plant. When enlarged, this facility will have a capacity of 1,500 cu. yd. per day.





determine the comparative statistical value of the data obtained. The larger companies will not have the same standards of operation that smaller producers follow, and lacking a truly composite cross-section, this fact must be kept in view in any valuation of the data.

Those producers who co-operated with us in presenting data reported an average of 1.63 plants per company, about the same as reported in the previous year, but from many different companies than those contributing information last year. In making up the statistics as the basis for these comments, we took this factor of multiple plants per company into our consideration and evaluation of data to obtain averages.

Production varied, as usual, in different sections of the country. To get a closer approximation of the conditions existing in each, we grouped the returns received into five sections —North Central (12 states), Northeast (9 states), Southwest (12 states), Southwest (4 states), and West (11 states). We feel that the returns constitute a fair cross-section of the average to be found in these respective areas. As stated, the phenomenal increase reported by producers in the Northeast (18.5 percent) was followed by North Central, 9.7 percent; West, 9.0; Southeast, 8.0; and Southwest, 7.0 percent increases in production over 1955.

The same producers in the Northeast and West reported business decreases in 1955 under that obtained in 1954. On the composite data graph it is clear that the volume of total production of ready-mix in 1956 again coincided with a line representing a mean increase. Both 1954 and 1955 figures fell slightly below this mean.

Cement Factor It is reported that more cement is being used per cu. yd. of ready-mixed concrete than previously. Deviations from the average of 1.41 bbl. vary from 1.60 bbl. used in the North Central areas, down to the relatively meager 1.23 bbl. reported by Southwest producers. More cement is coming to the plants *via* bulk shipments than before, in either railroad cars or bulk truck carriers. A composite national average showed that 86.6 percent of the cement is so received, an increase of 3.7 percent over last year. The Southwest plants indicated that bulk shipments were used in 96 percent of the total purchases there, while the Southeast plants adopted that method in only 75 percent of incoming shipments.

Types of Operation Reports indicate that the 85 percent of plants using transit mixing in their operation, as reported in 1955, had been radically reduced, to the figure 71 percent for 1956. So also has the number of operations which have both transit and central mixing combination plants, the number of these now being only 2 percent of the total. The remainder use central mixing in plants. This percentage will also vary in different sections, 95 percent of the Northeastern plants using transit mixing, while only 61 percent of the plants in the Southeast use that method. As mentioned in our last year's comment in regard to type of operation, if there is a trend toward central mixing, it is not apparent from these figures.

Our prediction that the previous trend toward more plants per company had probably reached an economic level in 1955, was more or less confirmed. This year's figures varied from the 1.94 plants per company in the Northeast, to 1.10 for this ratio in the Southeast. As we commented before, the business of ready-mixed concrete is largely becoming a matter of delivery, in that the hauling end of the operation is one of the largest cost elements. In this respect, economies can be best effected by decentralization of facilities in areas where such a procedure is indicated by local conditions.

Hauling Equipment One trend clearly emphasized in this year's reports is the use of larger mixer drums on trucks. While this practice has been increasingly noted over the last few years, we have looked to the time when the size of drums would tend to be stabilized. The legal weight limits adopted in various states and municipalities largely determine drum size, especially where authorities feel that heavy truck loads are endangering their pavements. Probably due in major part to more efficient design of truck chassis carrying the concentrated loads of concrete, it appears that stabilization of sizes has not yet been reached. In fact, this year's reports show a positive change in that there has been an increase of 173 per cent in the number of drums of larger than 6-cu. yd. capacity, and a 52 percent increase in those of 6½-cu. yd. size; the smaller sizes have also decreased.

In this comparison the total number of trucks used increased only 11 percent in the last year, whereas the average drum capacity increased 14.5 percent in the same period. There were 11.6 units per company in 1956, compared with the 10.1 units used by the same companies in the prior year. Total drum capacity per company rose to 53.7 cu. yd. from the 46.9 cu. yd. in 1955, an increase of 14.5 percent.

The greatest increase occurred in the West, where the average 49.0 cu. yd. for this figure increased 23.4 percent from the comparatively low average of 39.7 cu. yd. in 1955. Here the use of large drums (over 6½ cu. yd.) was tripled over last year.

The average truck capacity per unit operated in all areas was only moderately larger. The national average increased to 4.76 cu. yd. from

the 4.61 cu. yd. in 1955, or 3.2 percent. Again, in the West, drums averaged 5.29 cu. yd. rated capacity, and the overall truck capacity increased 23.5 percent there, to lead all other areas. In all sections the continued use of a 4½-cu. yd. size—the largest drum which can be used on a single-axle rear-drive truck chassis—is noted. In most states, however, only 4 cu. yd. of concrete can be legally hauled in such a unit with this equipment, and it is seen in this connection that the newly developed 4-cu. yd. rated drum (in the past 3½-cu. yd.) is increasingly preferred.

Since the truck equipment represents the largest item of investment for the producer—usually several times that of the plant itself—and requires more personnel and attention to maintain in working condition, it is of great importance that the transportation units be efficient, especially as to the proper size. Other considerations which were not, unfortunately, covered by our questionnaire, include the type of drive on the drums, whether by separate engine, power take-off unit, hydraulic, electric, etc. It is to be hoped that the new ratings, arbitrarily adding ½ cu. yd. to each size, will be reviewed in the near future, on a more exact basis of determining the actual load-carrying capacities of each size of drum.

Wages and Employees In our questionnaire the producer was asked to compare hourly wages paid to employees for the past two years. Those replying to this question furnished data from which it is determined that the average hourly wage in the industry at the end of 1956 was $1.89. This is an 8.0 percent increase over 1955 wages. The wage pattern naturally varies in different sections, running from $2.19 per hour paid in the plants in the West section, to $1.33 paid in the Southwest. Other Southern plants were included in the lower wage payment brackets. These rate increases represent figures slightly above the general run of increases granted (or forced by) labor in the construction industry within the past year.

Despite the increasing mechanization of equipment constantly seen in the industry, the number of employees per company increased 11.2 percent, from a 1955 average of 17.9, to 19.9 employees in 1956. This apparent disparity might be accounted for by the overall increase in production. However, a comparison of data reveals that the average plant produced 2,030 cu. yd. per employee in 1956, and 2,045 cu. yd. with fewer employees the previous year, a relatively slight reduction, rather than an increase, for the comparable years. A possible conclusion would be that the efficiency of the employee has dropped. This "relative efficiency" rating varies from 2,460 cu. yd. per employee in the West, down to the 1,740 cu. yd. level at which the Northeast and Southwest sections tied.

Selling Prices Prices received for the average cu. yd. of ready-mix for the entire country enjoyed an increase of 5.4 percent, going from $12.72 in 1955 to $13.41 received in 1956. As an item of individual interest to producers, the area increases were: North Central, $12.66 to $13.79, an increase of 8.9 percent; Northeast, $13.40 to $14.02, 4.6 percent; Southeast, $11.94 to $12.53, 4.9 percent; Southwest, $12.15 to $12.64, 4.0 percent; and West, $12.65 to $13.11, 3.6 percent.

While the report of the N.R.M.C.A. survey for 1956 will not be out until later this year, it is well to point out that the "average value per cu. yd." given in that report for the year 1955—$11.89 per cu. yd.—probably does not include the average delivery costs of about 85 cents per cu. yd.; including this, the two figures covering delivery would be almost identical for that year. The average price increase of 5.4 percent more nearly reflects the general 1956 rise in prices for other construction materials, as compared with the difference in this comparison made a year ago in this review.

Because of the large return (48 percent) which the N.R.M.C.A. review enjoys, and the excellence of the report to all producers in the industry, it is hoped that in the future this survey will possibly include other than the strictly essential data which it has presumed to have accumulated. In our review we endeavor to list information of value to the ready-mixed concrete producer, in considerable more detail than the N.R.M.C.A. report, and we feel that these data are of interest to the individual producer. We invite suggestions as to additional facts which might be gleaned in our future reviews.

Admixtures The use of various admixtures in ready-mix increased in 1956 about 6.5 percent over the like use in the previous year. The percentage of the total concrete in which such inclusions were used varied somewhat with the location of the plant, the national average being about 41 percent in 1956 and 38.7 percent in 1955. Greatest percentage of use was in the Northeast, where over 57 percent of the ready-mixed concrete contained some admixture, compared with the plants in the Southwest, where only 24 percent included admix, either placed in the concrete by the producer, whether demanded by specification or not.

The admixtures most widely used included Darex, Pozzolith, Protex, Ayr-Trap, etc. They were included to modify the properties of the concrete in such a way as to make it more suitable for the work at hand. The reader who is interested in obtaining more information on admixtures for concrete is referred to the report of the American Concrete Institute Committee 212 on *Admixtures for Concrete.** This report was also distributed by N.R.M.C.A. as Publication No. 54, in December, 1954. An item of minor interest, perhaps, is the fact that the use of the admixtures increased in 1956 in the two northern sections of the country and declined in the remaining areas.

Lightweight Aggregates The percentage of plants using lightweight aggregates for concrete—mostly for floor or roof fill—was almost negligible, its use, such as it was, increasing from 1.6 per cent in 1955, to 2.1 percent in 1956. Depending upon the degree of availability of such aggregates, the greatest use of lightweight seems to have occurred in Florida or California or states adjacent. Both of these areas show a pronounced use of monolithic concrete structures. It appears that the potentialities of lightweight monolithic concrete has not yet been truly appreciated by the users and/or producers of ready-mix.

Communication Systems While the terms "two-way radio" and "ready-mix" are getting to be closely related in today's modern plants, especially in the larger plants located in urban centers, it appears that the potential market for such use is still large, if we are to judge from the reports of producers answering the question as to the degree of use. Over 72 percent of the returns included answers to this question, but only a few trucks of each fleet were equipped with radio. About 22 percent of these same producers said that they contem-

* The CONCRETE MANUFACTURER, May, 1956, page 802.

(*Continued on page* 340)

Block Production Off Slightly in 1956

Opinions Divided as to Future Prospects

By ROY L. PECK

AFTER enjoying an unprecedented production increase in 1955, the concrete block industry seems to have taken a breathing spell last year. From the unusually good return in answers received from the questionnaires sent to a representative portion of the industry, it appears that about 3.8 percent less production was attained in 1956 than in the previous year. Confirmation of this conclusion can be found in the Department of Commerce figures for the year, which show that in those classes of construction in which concrete masonry is mainly used, the 1956 totals ran counter to the overall record volume increases for the entire country.

Opinions of producers as to anticipated business in 1957 were practically identical between optimism and pessimism, with a large percentage of the answers reflecting uncertainty as to volume of future business. These opinions naturally varied according to the local prospective construction influencing the producer in each case. In general the anticipated volume is based on the assumption that the general level of economic activity will advance moderately in 1957, and that the decline in housing experienced in 1956 will be reversed to a normal demand.

In order to present as accurate a picture as possible of conditions obtaining which determine respective volumes of business in each area, we have assembled all data received into four geographical groupings for the country—North Central, East, South, and West—each group embracing from eight to sixteen adjacent states in which conditions are similar. It should be borne in mind that while the conclusions reached in this survey include essential data such as production, prices, types of curing, capacities, wages, cement consumption, etc., the survey also presents substantiating data for pointing out trends in practice. We feel that the experiences of other producers are of interest to the reader, in anticipating possible action to be taken by him.

We do not presume to furnish a representative cross-section of the industry in our sampling, nor is this possible in any known survey today. It is regretted that there is no system for obtaining reliable statistics on the concrete block industry which would be more than an educated guess as to its activities. A really worthwhile job of this nature is being done by the National Ready Mixed Concrete Association in accumulating data from a high percentage of such producers. It is hoped that the block industry will one day see the need of exchanging like information of mutual benefit.

Appreciating the need for comparative data, we have asked producers this year for figures on production, use of lightweight aggregates, prices, number of and machine capacities, number of employees, wages paid, etc., for prior as well as the current year's operations. Returns received form a basis for some worthwhile comparisons. As has been done in past surveys, we preserve in strict confidence the contributor's information. His data are not disclosed to anyone, nor their content used for any other purpose than for reaching intelligent conclusions as to average operations or trends in the

NEW CONSTRUCTION ACTIVITY IN CONTINENTAL UNITED STATES

*1956 and Outlook for 1957**

(Millions of Dollars)

Type of Construction	1956	1957	Percent of Change
Total new construction	44,125	46,400	5
Private, total	**30,700**	**31,400**	**2**
Residential (excluding farm)	15,200	14,700	— 3
New dwelling units	13,370	12,700	— 5
Additions and alterations	1,385	1,500	8
Nonhousekeeping	445	500	12
Nonresidential building	8,800	9,275	5
Industrial	3,060	3,200	5
Office buildings and warehouses	1,365	1,500	10
Stores, restaurants and garages	1,935	1,800	— 7
Other nonresidential building	2,440	2,775	14
Religious	775	875	13
Educational	535	550	3
Hospital and institutional	325	400	23
Social and recreational	270	300	11
Miscellaneous	535	650	21
Farm construction	1,500	1,550	3
Public utility	5,080	5,750	13
Railroad	435	450	3
Telephone and telegraph	970	1,075	11
Other public utility	3,675	4,225	15
Local transit	25	25	..
Pipe line	350	375	7
Electric light and power	1,900	2,100	11
Gas	1,400	1,725	23
All other private	120	125	4
Public, total	**13,425**	**15,000**	**12**
Residential	275	450	64
Nonresidential building	4,050	4,500	11
Industrial	425	425	..
Educational	2,560	2,850	11
Hospital and institutional	305	375	23
Other nonresidential building	760	850	12
Military facilities	1,420	1,525	7
Highway	5,100	5,500	8
Sewerage disposal	710	875	23
Water supply	580	675	16
Public service enterprises	450	475	6
Conservation and development	660	800	21
All other public	180	200	11

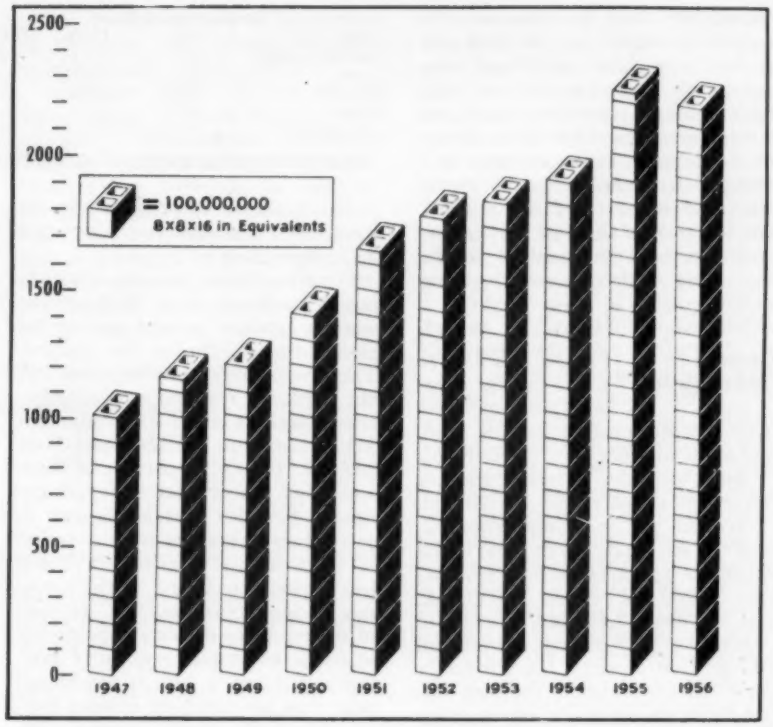
* Joint estimates of the Department of Co.. ..d the Department of Labor.

industry on each area basis. The producer need not identify himself; the postmarked envelope generally locates for us the area in which his plant is situated.

Production Volume Those manufactures of concrete block who answered our questionnaire sent to them in the closing month of 1956, estimated data applying for the full year in nearly all cases. The figures they gave us included full production for the preceding two years, which furnished confirmation of the conclusions reached by us a year ago when we presented the review of 1955. The producers' statements of production were averaged in each area, and constituted a composite figure applying to the entire country. The average figures showed that total production was 3.8 percent less in 1956 than 1955. Subtracting this decrease from the estimate of 2,260,000,000 block (8-in. equivalents) produced in 1955, we reached a figure of about 2,150,000,000 units produced in 1956.

This figure, representing over 90,000,000 less blocks produced in 1956 than in the previous year, fell only slightly below the line representing the mean annual increase, which is shown on the accompanying chart. For the ten years including 1947 to 1956, this average annual increase has amounted to about 115,000,000 units, from the total estimated production of about 1,000,000,000 units reached in 1947. This figure (from Bureau of Census, Department of Commerce) was the last truly authentic estimate of production, until that official figure for the production of 1954 was recently received, showing that approximately 1,868,300,000 units were made.

We had estimated in our review for 1954 that production amounted to 1,900,000,000 units, which is close confirmation of the accuracy of past accumulative estimates we have made over the ten-year period. The same producers who furnished estimates for 1956 also gave us (in most part) their figures for the prior year. These indicated that 1955 production had increased 18.5 percent over that of 1954. This figure closely confirms our estimate made a year ago, that 1955 production seemed to be 19 percent higher than in 1954. The average sectional variations may be seen in the accompanying table, which also shows the average production size of the companies which contributed data.



Average-Plant Production in Thousands of 8-in. Equivalent Units by Areas

Area	1956	1955	1954	% Variation '55-'56	% Variation '54-'55
North Central	710	740	511	— 4.2	+ 5.7
East	1838	1832	1730	+ 0.003	+ 5.9
South	1250	1364	1111	— 8.3	+22.8
West	1782	1660	1388	+ 7.3	+19.6

An inspection of this table shows that the sectional variations occurring in 1956 were considerable from those in the prior year, and that the pattern varied in each section of the country, the major decreases being shown in the Southern and North Central areas, with a normal increase revealed in the Western area alone.

Lightweight Aggregates Of the plants reporting on the use of lightweight aggregates in their blocks, 70 percent used some types of such aggregates. For the entire country this amounted to 51.2 percent of the total production, the proportion about the same as last year. Variations between different areas again could be seen, the percentage of use varying as shown on the accompanying table.

By class of materials, lightweight aggregate use was listed under four types. The percentage of each type used, of total 1956 block production in the plants reporting, were as follows: Cinders (including scoria types), 47.6 percent; expanded slag, 25.5 percent; expanded shale or clay, 15.9 percent; other types, 11.2 percent. The high percentage of cinder types used was probably due to the high percentage of use in the West sections, where considerable scoria cinders constitute a large part of the block production.

It is interesting that the percentage of use of the various types of lightweight aggregates for blocks varied considerably from the same percentages shown in last year's reports, in each area. The dwindling supply of commercial cinders in the North

Lightweight Units—Percentage of Total Production by Areas

Area	% Use 1956	% Use 1955	% Variation
North Central	42.0	35.5	+18.3
East	64.0	67.7	— 5.8
South	39.1	35.6	+10.0
West	81.8	88.0	— 9.6

Central and East, for instance, has resulted in higher use of both expanded slags and shale and clay aggregates. For an example of this, the percentages reported in the North Central areas for 1956 show cinder use 3.0 percent, expanded slags 56.7 percent, shales and clays 35.0 percent, and other types 5.3 percent. The increase in shale or clay aggregates has been pronounced in the East areas, with new sources being made available in many localities.

Cement Consumption Producers were asked in the questionnaire to state their cement consumption for 1956, and as to whether they received this in bulk or sacks. Average use for the entire country was 13,720 bbl. of cement per company reporting, with the sectional consumption in the North Central area being 6,980 bbl., East 22,200 bbl., South 13,050 bbl., and the West 12,400 bbl. Receipt of cement was 49.3 percent in bulk and 50.7 percent in sacks, but this factor varied in each section, the bulk system being used in 45.0 percent in the North Central area, 60.4 percent in the East, 30.8 in the South and 74.5 percent in the West.

It appears that the concrete block industry used about 26,000,000 bbl. of portland cement in 1956, or slightly below the amount used in the prior year. This figure agrees quite closely with that estimated by the Bureau of Census, when the estimate for 1954 (latest available) is projected on the average increase in production for the succeeding years.

The yield in blocks per sack of cement for all areas in 1956 was reported as 24.3 standard 8- by 8- by 16-in. units, which figure closely approximates the total consumption of cement for that year. The area averages for standard blocks per sack varies only slightly from the general average, the yield being highest (28.0) in the Western companies, and lowest in the North Central (22.9). Yields of block per sack for lightweight units was slightly below the above figures, the general average being 23.6 units, the area averages maintaining the same proportion except in the West, where only 21.0 lightweight units per sack were reported.

Yield per cu. yd. of aggregates, in standard heavyweight, and in lightweight units, varied slightly in different areas from the general average of 66.8 8-in. equivalent units per cu. yd. of heavy aggregates, and of 61.4 units per cu. yd. of lightweight aggregates. The lowest such yield was shown by producers in the East, where the figures were 56.4 and 54.7 respectively.

	Employees per Plant			Output in Block per Employee		
Area	1956	1955	% Change	1956	1955	% Change
North Central	10.5	10.1	+4.0	67,600	73,300	—7.8
East	16.0	16.4	—2.5	114,900	111,700	+2.9
South	20.7	21.8	—4.8	60,400	62,500	—3.4
West	12.1	12.3	—1.6	147,200	135,000	+9.0
All Areas	14.7	15.0	—2.0	85,000	86,700	—3.1

Data furnished on one question put to producers, as to their cement storage capacity maintained at the plants, threw light on this subject. The general average storage was 546 bbl., with the regional area averages being North Central 444 bbl., East 511 bbl., South 765 bbl., and West 283 bbl. Nearly 70 percent of those answering stated that their cement storage facilities were inadequate to carry their operations over a period of short supply in cement. It will be interesting to note if in the future this inadequacy is remedied. In view of the tendency of cement producers to adopt an annual revision of pricing at the year's end, it would appear that an adequate cement storage, to provide against future periods of short supply, was indicated.

Hourly Capacities Answers on this item were quite complete and included data on both 1955 and 1956 machine production. Overall returns showed an average of 1.31 machines per company in '56 and 1.30 in '55. In the Western plants these averages were 1.83 as against 2.00, indicating that while more machines per plant than the general average were used in that area, the companies were possibly going to larger machine capacity.

Hourly machine capacity, in 8-in. units per company, was shown as 623 units in 1956 as against 582 units, an increase in this factor of capacity of 7.7 percent. Areawise, this figure varied, with the greatest increases (approximately 10 percent) occurring in the East and South. Blocks per hour per machine was given as 476 in 1956 and 448 in 1955, a 6.2 percent increase in the year.

Types of Curing Producers were asked to designate the type of curing, whether it was low-pressure-high-temperature type, high pressure (autoclaved), or CO_2 drying (air-drying). The first type (standard) was used in 81.3 percent of all the plants, the high-pressure type in 8.7 percent of the plants reporting, and the last type in 10.0 percent of the plants. It is interesting to note that autoclaving is on the increase, but is still used in a relatively small percentage of all plants.

Area percentages for this selection of curing method follow: North Central, low-pressure 89.2, high-pressure 3.6, air-drying 7.2; East, 77.0, 15.4, 7.6; South 94.5, 5.5, 0; West, 37.5, 12.5, 50.0. It was noted that the tendency to use high-pressure autoclaving was pronounced in the plants having high production volumes. Remarks from typical producers were to the effect that satisfactory units could be produced by any of the methods, but that autoclaving furnished a unit about 1½ cents cheaper than other types, avoided the necessity of having large storage area, and reduced interest on the value of units made but undelivered.

Numbers of Employees Data as to the numbers of employees in the companies and the output per employee furnish an interesting comparison, the table above showing the facts as reported from all areas.

It will be seen from the above comparative figures that the efficiency of the employee in the block plants of the East and West areas is far above that of other areas, if we are to judge this from the reported data. For the country as a whole it appears that a slight reduction in numbers of employees and also in output per employee occurred in 1956.

Hourly Wages The average hourly wage paid in the block plants and the average labor cost per unit, is shown in the accompanying table.

	Hourly Wages Paid Employees			Labor Cost in Cents per Unit		
Area	1956	1955	% Change	1956	1955	% Change
North Central	$1.61	$1.50	+ 4.0	3.32	3.23	+2.8
East	1.52	1.43	+ 6.3	2.08	2.12	—1.9
South	1.12	1.01	+10.9	1.76	1.75	+0.6
West	1.96	1.88	+ 4.3	2.18	2.09	+4.3
All Areas (Ave.)	1.48	1.38	+ 7.2	2.37	2.36	+0.4

Selling Prices The average price received for an 8-in. concrete block in 1956 is shown in the following table, along with the prices received in the prior year by the same reporting companies. The increase of 3.1 percent for the average in all areas over the previous year is somewhat below the average price rise in the materials which make up the unit, including portland cement, sand and gravel, crushed stone, expanded slag, expanded shale and clay, etc.

Area	Selling Prices per 8-in. Equivalent Unit in Cents 1956	1955	% Change
North Cental	20.3	19.4	+4.6
East	18.7	18.3	+2.2
South	19.5	19.1	+2.1
West	24.1	23.4	+3.0
All Areas (Ave.)	19.9	19.3	+3.1

Considerable comment was received from producers as to the existing low prices on concrete block. When some reason for this was sought, in field investigations in the past, it was apparent that in many cases the fault lay with the producers themselves, in condoning price-cutting in their areas. This vicious practice should be curtailed or eliminated, as it results only in profits to competitive materials, in that a large increase in sales is required to overcome the effect of a price cut of any proportions.

Types of Equipment Almost every plant manufacturing concrete block makes use of various types of equipment for handling the units from the molding machine to cubing and storage areas, and for moving materials in the yard or making deliveries. Our question covering this item asked as to the numbers of trucks, forklift trucks, and cranes which were employed in this service. From the answers received we can estimate that the average plant makes use of 4.9 trucks, 2.7 forklifts, anl 2.1 cranes, the last of either ½- or ¾-cu. yd. capacity There was little variation of the basic area figures making up these averages, from the over-all average.

Miscellaneous A number of items in our questionnaire dealt with other phases of the concrete block production and with materials which were produced other than the basic concrete block. In order of the extent of such products were listed lintels, pipe, floor systems, drain tile, sewer blocks, garden ornaments, concrete vaults, etc. These items represented about 19 percent of the total sales volume of those producers who made them.

Somewhat above 80 percent of those answering stated that they sold or leased appurtenant equipment used in concrete masonry construction. These materials, in order of volume, were wall reinforcing, cement, windows, lime and other materials or products. A small percentage of the producers leased mortar mixers, hoppers, conveyors, tower hoists, scaffolding, etc. to their customers, mostly for their convenience in more efficiently handling concrete blocks on the job.

An exceedingly small percentage of the block-making firms said there was any affiliation of their plants with producers of crushed stone, ready-mix, sand and gravel, or other producers of basic materials. Although no specific question of the extended use of fly ash was included in this year's questionnaire, remarks by a number of producers answering appeared to indicate that this practice is increasing, with the main reason for use being given that fly ash up to 20 percent of the volume of cement affords the relatively harsh block mixes added plasticity, and results in longer mold life, and truer corners on the units, while maintaining the required strength.

The use of two-way radio units in the delivery fleets of concrete block producers is not nearly so widespread as such use in the ready mixed concrete fleets, mainly due to the important time element involved in the latter operation.

In reporting as to the average amount spent annually for maintenance supplies, the figure for all areas was $7,600. The same companies reported spending on the average $3,600 annually for advertising and promotion of their products. There were great variations from this average in both cases, depending upon the location and size of the particular plant answering.

Several producers answering in general remarks stated that they had experienced some losses in using bulk cement shipments, which evidently occurred during the transporting, conveying, or batching of the cement. If other users of bulk cement find this difficulty they should investigate whether the invoiced net weight of the cement overruns the actual weight received because of inaccuracies in weighing procedures prior to the cement's arrival at the block plant. A recent bulletin (Technical Bulletin No. 10) was issued on this subject by the N.C.M.A. which discusses several phases of this possibly serious matter in certain plants.

Future Outlook Almost all of the producers who answered our questionnaire had some decided opinions as to what 1957 will bring them. These opinions varied, without following any definite pattern as to area. The optimistic (38 percent) among those who answered thought that their business volume next year would increase about 30 percent on the average. About 10 percent felt that 1957 would bring about a 15 percent reduction in their business. About 37 percent of the answers indicated that conditions would remain about the same for their plants next year, and 14 percent could not make up their mind as to which way the changes would go.

Various factors cited for the opinions given varied, including on the favorable side a better cement availability, new equipment, enlargement of the local building market, contemplated school expansions, greater acceptability of concrete block, more sales efforts, etc. Offered as evidence of poorer conditions to apply next year were a tighter money market, local cement shortage, possibilities of strikes, decreased farm income, decline in building market, price-cutting locally, etc.

During 1956, about 28 percent of all who answered said they planned to increase their plant capacity in 1957. Of those who so plan the expansion will be in a new plant for 6.5 percent, in new equipment for 54.8 percent, and in remodeling or making more efficient the present equipment processes in 38.7 percent of the cases. The average of the expenditures for this capacity increase will be approximately $28,000.

About 20 percent of those answering stated that they lost 10 percent of their total production in 1956. Reasons assigned for this loss were cement shortage in 55 percent of the cases, 25 percent due to strikes which had occurred in their plants, and the remaining 20 percent assigned other than these two basic causes.

Ready-Mixed Concrete Review

(*From page* 335)

plated the installation of two-way radios in additional units in the future. Over 52 percent of the plants answering the question as to the use of intercommunication systems replied that such systems were installed in their plants.

Yard Equipment Of the companies which volunteered information as to the handling equipment in their plants, 38 percent stated that they used cranes with clamshell buckets, the average use being 1.5 cranes per company. The average size was from ½- to ¾-cu. yd. A greater percentage of the plants in the North Central section make use of cranes than in other areas. Most of the producers seem to favor the use of tractor-mounted equipment over rubber-tired mountings.

On front-end loaders, 73 percent of those answering said that they used such equipment mounted on rubber-tired wheels, the remainder on crawler mounts. Sizes used varied from ½ to over 2 cu. yd., depending upon the size of the plant and the types of storage.

Future Outlook Predictions of those producers who offered answers as to the probable future outlook in their business, were listed into four classes. Of these, 47 percent thought business would be about 8 percent (average) better in 1957; 3 percent felt that it would decrease slightly (less than 1 percent as an average); 35 percent saw no change from 1956; and 15 percent had no opinion as to what next year would bring.

Typical of the remarks appended to some of the replies which were received were the following: "Shortage of mortgage money will restrict building in my area."—"Expect we will get more cement next year, which will help increase our volume."—"1957 business will depend upon construction locally. We are hopeful it will pick up!"—"Conditions locally are in a recession due to lack of industry and much unemployment. Lack of private home building will cause our business to decrease slightly in 1957."—"New highway work will help."—"More cement, more home building, and more trucks should boost our volume next year."—"Drouth area we are in will be the governing factor."—"Better acceptance of ready-mix will increase our business."—"Farmers here lack buying power, so we are on the downgrade." — "Commercial, industrial expansion will help us."—"Aggressive sales program, regional activity, and easing of tight money supply should give us 10 percent more in 1957."—"Federal highway program should add considerable volume."—"Next year will be about the same, as conditions here never change.'—"More stringent credit and delivery terms will counteract the increased demand."—"New industries locating in this (Southwest) area will give us larger volume."

Answering a question as to what would be spent for either new equipment or modernization of their plants, 40 percent of those returning the questionnaire offered data on this item, the average amount being $45,000. New equipment will be procured in 71 percent of the cases, and 29 percent will be spent for modernizing. Over 50 percent of the replies received showed that an average amount of $37,500 was spent last year for maintenance and supplies for their plant. In the replies received from the Western section of the country this average was $54,500 per plant.

Over 90 percent of the producers returning questionnaires had opinions on the effect of the coming federal highway program on the ready-mix business next year. Of those who stated such an opinion, 56 percent felt that it would help somewhat, 14 percent said it would help a lot, and 30 percent saw little help to their businesses. As to possible shortages caused by the highway program, half of those replying expressed an opinion on this question. About 83 percent felt that shortages would ensue in materials, 7 percent in equipment, and 10 percent felt that shortages would occur in other ways.

Miscellaneous Of the companies replying, 50 percent are affiliated with other production enterprises. Associations with sand-and-gravel projects were listed for 45 percent, 10 percent had affiliations with crushed stone production, 35 percent with concrete block firms, and 10 percent with other types of related businesses.

About 10 percent of the total replies stated that end products other than ready-mix were produced in their plants. Additional services were offered by 27 percent of the firms replying, including lease or sale of forms, tower hoists, collecting hoppers, or pumps, the first-named type of equipment being generally the item dealt in.

While reference to possible associations with prestressed concrete producers was not specifically requested in our questionnaire, frequent visits to ready-mix firms made by our editors throughout the last year have indicated that this is a growingly important subject, especially in those cities where prestressed concrete production has begun. Due to the phenominal growth of this method of designing concrete structural members, it behooves all ready-mix producers to check the facts on its effect on their normal processes of distribution. Many prestressed concrete firms have initiated their own concrete-producing plants, due chiefly to their inability to purchase ready-mix at an equitable price from the existing plant in the locality. Other new firms in this field have arrived at a fair basis with the local ready-mix man, and such an association profits both parties.

An improved process for marbleizing cement to be used for patio equipment has been developed by Hy Solomon, Sy Gersten, and Lew Sable, new owners of Cementcraft, Inc., Hollywood, Fla. The patio stepping stones produced by Cemencraft have the smooth finish and coloring of real marble, and can also be used for indoor tile flooring.

An expansion project designed to reduce curing time in making concrete products has been completed at the Capitol Concrete Products Company, North Topeka, Kans. The expansion included the installation of a new steam boiler and an autoclave.

Donald H. Herak has been named manager of the Acme Concrete Company, Spokane, Wash. Mr. Herak was formerly Spokane district engineer with the Portland Cement Association. Acme has been in the ready-mix concrete business since 1939, and recently completed a $100,000 modernization program at its sand and gravel plant in the Spokane Valley.

Two wholly-owned subsidiaries of the Koehring Company, Milwaukee, Wis., have been changed to divisional status. The Kwik-Mix Company, Port Washington, will be known as the Kwik-Mix Division, and the Parsons Company, Newton, Iowa, will be known as the Parsons Division of Koehring.

A complete autoclave installation engineered and fabricated by McNamar for the Hovey Concrete Products Co., Inc., Santa Fe, N. M.

Custom BUILT . . . by McNAMAR

McNAMAR PRODUCTS

- ROTARY KILNS
- BINS
- HOPPERS
- HEAT EXCHANGERS
- PROCESS PIPING
- PROPANE STORAGE TANKS
- PRESSURE VESSELS
- GAS COMPRESSOR PLANTS
- REFINERY TOWERS
- TRUCK TANKS (Propane-Gasoline)
- GASOLINE PLANTS

From the world's largest autoclave manufacturer comes the most advanced engineering and pre-fabricating ability available in the installation of autoclave plants.

McNamar's custom built installations are designed, built and engineered in the McNamar plant by skilled craftsmen.

Insure your future business now by dealing with a manufacturer backed by 18 years experience in the field.

Call, write or wire McNamar Boiler and Tank Company for further information.

McNAMAR BOILER & TANK CO.

BOX 868 — TULSA, OKLAHOMA CHerry 2-6291

They're swapping minutes for dollars!

Worthington MIXERAMA proves on your job that a Hi-Up Mixer earns more for you!

You're looking at the unique new truck mixer demonstration that's got the Ready-Mix industry buzzing!

Hundreds of Ready-Mix men are finding out at MIXERAMA that no other truck mixer is in the same league with the Worthington Hi-Up. MIXERAMA is an eye-opening exhibition of Hi-Up performance — *and you see it at work right on your own job!*

Sure, we're proud of the Hi-Up Mixer. So proud, in fact, that we make a special point at MIXERAMA of letting you do just about anything to the Hi-Up that strikes your fancy. Try out the clutch . . . swing out (or on!) the sturdy discharge chute . . . climb *inside* the drum (of the Cutaway Mixer) — we want you to see for yourself just why we say the Hi-Up Mixer is your best buy . . . why no other mixer is in the same league when it comes to delivering *more uniformly mixed* concrete *faster!*

Tell your Worthington distributor you want to see MIXERAMA, with a Hi-Up loading at your plant and then delivering concrete to your current job. Or watch MIXERAMA in your area—your distributor will set up the date. It's the most convincing demonstration you've ever seen. And it's staged under operating conditions that *you* select . . . the tougher, the better! Call your Worthington distributor today and tell him you want to see MIXERAMA right away.

The Whittemore Co. watched MIXERAMA ... then bought Five Worthington Hi-Ups!

Whittemore Co. V.P. says, "I've never seen a more sensational demonstration — nor a better truck mixer than Hi-Up"

Mr. A. Lovetere knows truck mixers inside out, knows from years of experience what kind of performance they *must* deliver to pay off for him.

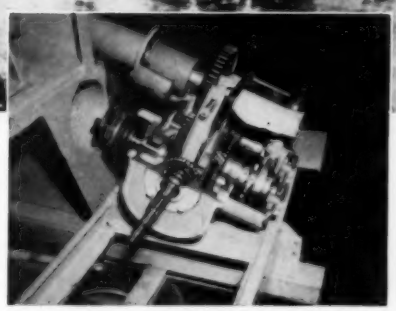
Just recently he attended a Worthington MIXERAMA. As he says, "There's no better way to find out what a Worthington Hi-Up Truck Mixer can really do. And what I saw sold me completely on Worthington.

I also learned that one of the basic reasons for Hi-Up performance is Worthington's big research program on concrete mixing. They've built their research findings right into the Hi-Up design—and you can see the results in the quality of concrete it delivers.

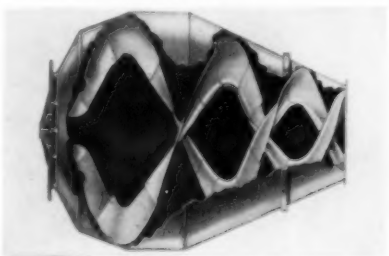
Every man in this business ought to see a MIXERAMA demonstration—it certainly opened *my* eyes. For me, there's no better truck mixer than the Hi-Up."

Be next in line!

See the Hi-Up in MIXERAMA or see it at your Worthington distributor. Worthington Corporation, Concrete Machinery Division, Section R.6.1A, Plainfield, New Jersey.



Toughest transmission built today. No adaptation of commercial unit, it's *designed* for mixer use. Single-lever operation for easy control from either end.



Beating this drum is impossible! Drum and blades are made of abrasion-resistant steel. Blade design gives thorough mixing, fast discharge. Advanced water system for precision mixing.

MIXERAMA'S on the way to you!

WORTHINGTON

If It's a Construction Job, It's a Hi-Up *Job*

V-Belts • QD Sheaves • Air Compressors • Air Tools • De-Watering Pumps • Truck Mixers

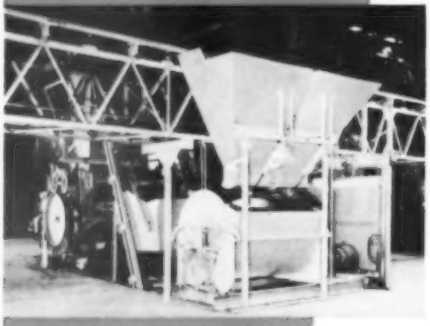
One of the World's Largest Block Plants Selects BERGEN

TRI-MATIC Machines Installed in Huge Plant of Canada Concrete Products, Inc.
Montreal, Canada

Under the able leadership of Miron Bros., Canada Concrete Products, Inc., has become one of the largest block plants in the world, housing 6 block machines under one roof — 4 BERGEN TRI-MATICS and 2 other machines completely modernized by BERGEN.

This plant includes complete facilities for material storage, block production, curing, cubing and storage. A company owned quarry, capable of producing 12,000 tons per day, supplies material for aggregate.

Interior view showing battery of BERGEN TRI-MATICS.



View of a BERGEN Skip Hoist and 50 cu. ft. Batch Mixer installed on each of the six machines.

Each block machine is equipped with a BERGEN Front Pallet Feeder, Height & Density Control, Off-Bearing Hoist, Elevator and Batch Mixer. Two double rack capacity automatic electric turntables were installed for each machine.

A central batcher and mixer supplies 150 tons of material per hour to the six machines. More than 80% of the cured block goes directly to the delivery truck from the cubing station, eliminating block handling and storage.

Whether you operate a one machine plant or a six machine plant, BERGEN equipment is designed to produce more, better quality block — consistently. Whatever your needs, write or phone BERGEN "Collect".

See the COMPLETE BERGEN BLOCK EQUIPMENT DISPLAY at the NCMA Annual Concrete Industries Exposition, Kiel Auditorium, St. Louis, Mo., February 25-28.

BERGEN
MACHINE & TOOL CO., INC.

NUTLEY, N. J.

PHONE "COLLECT"
NUTLEY (N. J.) 2-7300

CONCRETE PIPE

Industry Registers Small Production Gain in 1956

By ROY L. PECK

THE concrete pipe industry registered minor gains in production during the year 1956 according to the returns from representative producers who answered our questionnaire. Although the number of such returns was not large enough to represent an accurate cross-section of the industry in all of the five areas sampled, the averages clearly indicated that little gain, if any, in total production from the prior year, was accomplished. Accordingly, this total volume appears to be the same —approximately 13,000,000 tons— as in 1955.

In comparing the different types of machines used, it was indicated that both cast and machine-compacted pipe were produced in lower volume in 1956 than in 1955. No comparative figures were received from producers who used the centrifugal process for making pipe. The percentage of loss in volume varied considerably in different areas, for both these processes. Comparative totals for all areas showed a 17 percent gain from '55 to '56, and a loss of about 1 percent from '55 to '56.

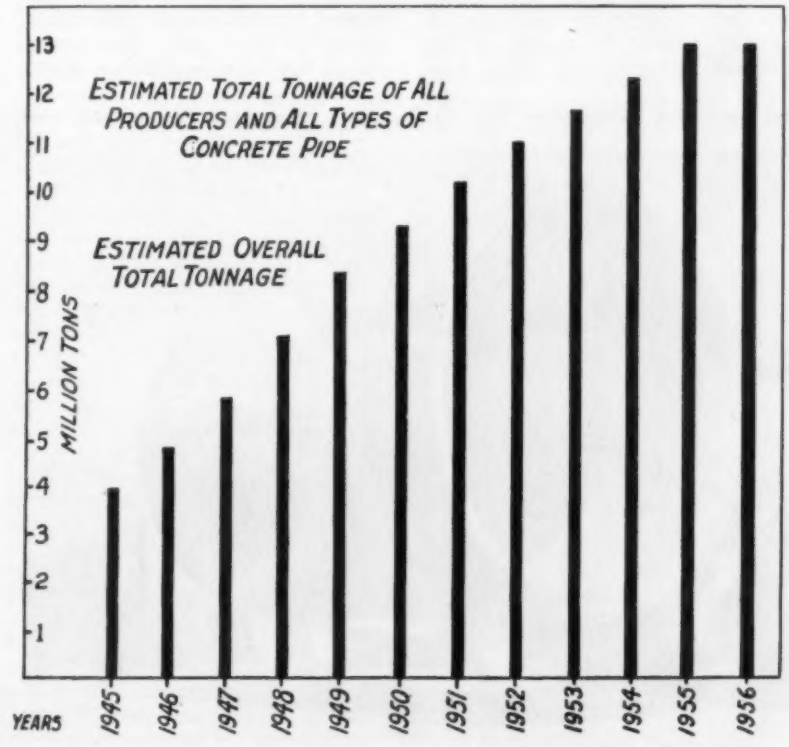
Production Volumes In the Northeast area, including some six states, there was an appreciable gain in total volume, after a loss experienced in the previous year. This pattern was reversed in the Southeast area, and in the North Central, Southwest, and West portions of the country a gain was registered in both years, these averaging around 10 percent over 1955, and around 12 percent the prior year. Reportedly, machine-compacted pipe accounted for about 80 percent of the total volumes.

This type of pipe, however, showed a 14 percent gain in total volumes in 1956 over that of 1955, while in the comparison for the '55-'54 period a 30 percent loss had been shown. It would appear, from remarks contributed by the reporting producers, that the period of 1956 represented a waiting period for the national highway program to proceed, and that the normal construction uses of pipe had not quite held up to the volume attained in 1955. The initial delays and controversies which are common to any program of like proportions evidently were more pronounced in the last year then previously. That the producers managed to obtain the margin of fair sales they did is to their credit.

Selling Prices Our questionnaire covered diameters of pipe from 4-in. to 72-in. In practically all of these sizes the prices obtained were higher, in varying percentages, than in the prior year. The one size which was slightly lower was the 15-in. diameter. Due to our inability to obtain comparative prices of all the different sizes of pipe from all areas, any conclusions as to these variations can only be general. The accompanying table shows average prices reported from all areas on the various sizes of pipe.

Pipe Machines The number of pipe machines operated per company continued to remain about the same as in the prior year, or about 2.75 machines per company in 1956, as compared with 2.73 in 1955. The proportion was higher in the Southwest section, probably due to the relative size of the companies reporting from that area. The hourly capacity of the average machine rose considerably during the year, according to those who reported on this item, the figure rising from 28 pipe per hour in 1955 to 40 in 1956, or a gain of 43 percent. This would indicate that larger machines are now being used than formerly. Area averages in this respect varied from the general capacity figure, being greatest in the North Central area.

Curing Steam curing continued to be the method used by the great majority of producers, although combinations of steam and water, or



Diameters (in in.)	Comparative Prices of Pipe 1956 - 1955 Prices per lineal ft. (in cents) 1956	1955	Change in Percent
4	35	35	0
6	36	34	11
8	61	60	2
10	60	56	7
12	$ 1.16	$ 1.11	10
15	1.79	1.82	— 2
18	2.06	1.98	4
24	3.18	2.99	6
30	4.95	4.79	3
36	6.73	6.43	5
42	9.60	9.26	4
48	11.03	10.66	3
54	14.27	13.77	4
60	17.56	17.31	1
72	24.73	24.73	0

water spray was also followed by many pipe makers. The types of curing varied according to the location of the plants in many cases, those in the Southern areas in which higher daily temperatures prevail usually being content with methods which kept the newly made pipe damp for 3 or more days.

Employees and Wages Fewer employees seemingly were required to produce the output of pipe in 1956 than were similarly employed the previous year, the general average for all areas decreasing about 8 percent from the figure of 37.3 employees per plant in 1955 down to 34.4 such employees in 1956. The greatest decrease occurred in the plants reporting located in the North Central areas.

Wages were reportedly about 5 percent higher in 1956 than in 1955, the average for all sections rising from the $1.38 paid per hour in 1955, to the $1.45 paid last year. Sectionally, the wages paid in the Northeast fell slightly during the year, from $1.52 to $1.49 per hour, while those in the Southeast rose about 10 percent, from $1.16 to $1.28 per hour.

Looking Ahead Asked as to contemplated business volumes in 1957, 45 percent of producers answering said they believed that conditions would be better, the general average figure for this being 18 percent. About 40 percent of the answers indicated that other producers felt that no change of consequence would occur next year. Another 5 percent of the producers thought that 1957 would bring reverses to them, with a decreased volume averaging around 50 percent. Ten percent of the producers couldn't decide what would happen next year.

In the majority of cases where increases in business were looked for, the producer stated that it was because of contemplated highway construction in his locality, reflecting the general opinion in this regard. As the products of the pipe industry are usually among the first items to be installed in a highway program, it should not be too long a time before these predictions are confirmed or denied.

Of those producers who expected that they would increase their pipe producing capacities during 1957, most of these said it would be accomplished by means of new equipment, others by remodeling, and a few contemplated new plants. The overall average cost for such capacity increase was around $22,750.

A comparative few of the producers answering the questionnaire revealed that they had lost any production in 1956 for any reason. Those who did lose production said that it was due to cement shortage in only a few cases, and to strikes or other causes in the remainder of the cases reported. The average amount reported lost was only slightly over 500 tons of pipe. This pattern varied but little in different areas.

This tractor, owned by New England Concrete Pipe Construction, Newton Upper Falls, Mass., carries a 10-ton, 84-in. diameter, 10-ft. long concrete pipe.

Miscellaneous Few pipe manufacturers are affiliated with other production enterprises, such as sand and gravel, crushed stone, ready mixed concrete, or other types producing materials or products. If one of these was named more frequently than others, it was ready mixed concrete, this endeavor seemingly being most easily and profitably combined with the production of concrete pipe.

Likewise, relatively few of the producers who answered said that they were interested in anything but pipe. The few who had other production said it was of concrete septic tanks, sewer blocks, concrete burial vaults, fence posts and lintels, etc., in that order of preference. The average amount of such materials in percentage of total sales, was about 23 percent.

The average pipe producing plant makes use of 7½ trucks, 4 forklift trucks, 2 cranes of 1½-cu. yd. capacity, and 1 end loader of ½-cu. yd. average capacity, according to the listing of those producers who answered our question as to miscellaneous equipment utilized around their plants. Naturally, the numbers of such equipment will vary in accordance with the size of the plant, those plants in the Southwest perhaps making use of more mechanized equipment than in other sections.

An average of around $12,000 is spent at this average pipe plant annually for maintenance supplies. The same average producer spends about $3,200 for advertising his wares. Generally, the producers in the Southwest spend more than others for both these items.

In forecasting probable trends in the concrete pipe industry which will be apparent in 1957, the following are predominant. There will undoubtedly be a large increase in the demand for culvert pipe, in view of the expanded highway program on a national basis, this item being one of the first to be installed in this type of construction. Mainly for the same reason, a sizable increase in the demand for sanitary sewer pipe is expected. A contributing factor for such an increase is the replacement of septic tank use (by extension of sanitary sewer lines) in various municipalities where local legislation opposes the septic tank method of taking care of sewerage effluent.

The coming year should prove a better one than 1956 in the matter of overall business volume, but perhaps not so good for profits, due to the fact that while costs will be up, material constituents of the pipe will be priced even higher, according to reports from producers of steel, cement, sand and gravel, etc. Another factor which must be considered in this appraisal is that competition will be keener, both from the standpoint of that offered by the installation of incoming plants in many locations, and from the competition which is being increasingly offered by pipe made of materials other than concrete.

In 1957 consumers will require more testing of concrete pipe from the producers everywhere. This demand for higher quality reflects the industry's endeavors to raise this attribute of concrete pipe, following some few cases where it has been lacking in the past. The efforts of the American Concrete Pipe Association over the years, to achieve higher quality in the product, seems to have accomplished much in this direction.

Sizes of pipe will be larger next year, and will increase appreciably over the standard maximum reached in late years. Also, there will no doubt be a greater demand for heavier designs of pipe, especially where plant production of larger and heavier sections is readily available. The cost of labor (such as carpenters to build forms for cast-in-place rectangular designed sections) has risen unbelievably over the last few years.

From what we have been able to ascertain, the rubber coupling joint is certainly here to stay, and its present widespread use will even increase appreciably in 1957. Both infiltration and exfiltration testing will be used more and more next year.

Summing up, we feel that the concrete pipe industry will go into 1957 with increased potential business to look forward to, with the possible exception that the farm drain tile segment may not be as great as in the past. Several contributing factors that are well known in the industry tend to depress this volume.

Design Changes An entirely new concept in the design and requirements of concrete pipe was presented to the members of Committee C-13 on Concrete Pipe at its meeting last November in Chicago. This committee had for a number of years been considering a complete revision of the Specifications for Reinforced Concrete Sewer and Concrete Culvert Pipe (C75 and C76), having been particularly concerned over requirements for pipe over 72-in. diameter, for which the existing specifications do not provide ample requirements.

The committee very carefully reviewed and accepted, subject to letter ballot, a proposed complete revision of the specification, revising, combining and enlarging the present requirements of C75 and C76. This means that the recommendation will include the discontinuance of Specification C75, with the new specification continuing the designation C76.

The new concept in design is known as the "D-Load" method, which is a means of classifying the load on pipe.

A new specification is designed for both types of D-loads, whichever is desired by the consumer. Tables make it possible to choose the pipe especially designed to withstand five different degrees of loadings. It also provides for a choice of pipe design that will fit into the D-Load Ultimate tables as presently promulgated in the Bureau of Public Road's new design and installation criterion for concrete pipe culverts.

Important changes were accepted for immediate adoption in the Specification for Concrete Sewer Pipe (C14). A basic change provides two tables, one for standard strength, the other for extra strength, non-reinforced concrete sewer pipe. A new section was added to provide control requirements on the repair of pipe due to occasional imperfections in manufacture or accidental injury during handling. Changes were made in the section describing the permeability test to provide greater clarity and understanding. The hydrostatic test requirements will be returned to the specification as an optional procedure. The Tentative Specification for Reinforced Concrete Low-Head Pressure Pipe (C 361-T) will now be revised as result of consideration given it by the proper subcommittee and action by the main committee. The changes accepted pertain to the sections on basis of acceptance, minimum design, longitudinal reinforcement, joints, curing, permissable variation in dimensions, and repair. No changes were recommended to the Tentative Specifications for Reinforced Concrete Low-Head Internal Pressure Sewer Pipe (C 362-T).

With the placing of jurisdiction for concrete drain tile in Committee C-13, a new Subcommittee VI on Concrete Drain Tile was authorized, with Professor P. W. Manson, University of Minnesota, as chairman. Preliminary review was given by the new subcommittee to proposed requirements for concrete drain tile. Co-operative tests are planned to establish an improved test procedure for absorption, particularly, to affect better reproducibility.

Stop in and See Us at Booth 7241

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA ·

See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

AMERICAN ROAD BUILDERS ASSOCIATION

heat treating doubles Rex Blade life

It isn't likely that you ever have needed to replace the drum blades on your Rex Moto-Mixer...but just on the chance that you're operating in a territory where the aggregate is unusually abrasive, Rex Blades are now heat treated—assuring you greatly increased life under severe service.

This hidden feature is exclusive with Rex. It's another plus value in Rex leadership engineering.

Rex Adjusta-Wate Moto-Mixers® are available in all standard sizes—with auxiliary drum power or with FEPTO, the new Front Engine Power Take-Off that rotates your drum at speeds unaffected by declutching and gear shifting. See your Rex Distributor or write CHAIN Belt Company.

CHAIN BELT COMPANY REX COMPANY

DON'T PENALIZE YOUR PROFITS

ADJUSTA-WATE MOTO-MIXERS®

LEADERSHIP...THROUGH CREATIVE ENGINEERING

CHAIN BELT COMPANY / 4782 W. Greenfield Ave., Milwaukee 1, Wis.

Prestressed Concrete—A New Concept

vigorous addition to the construction industry completes best year of growth

By ROY L. PECK

If one were to point out the most epochal mileposts of progress in the concrete industry he would undoubtedly place prestressed concrete at the top of the list of accomplishments reached in the last half-century of development. In the period of the last five years, replete with outstanding contributions to the progress attained by the versatile material, the art of prestressing has paced the field.

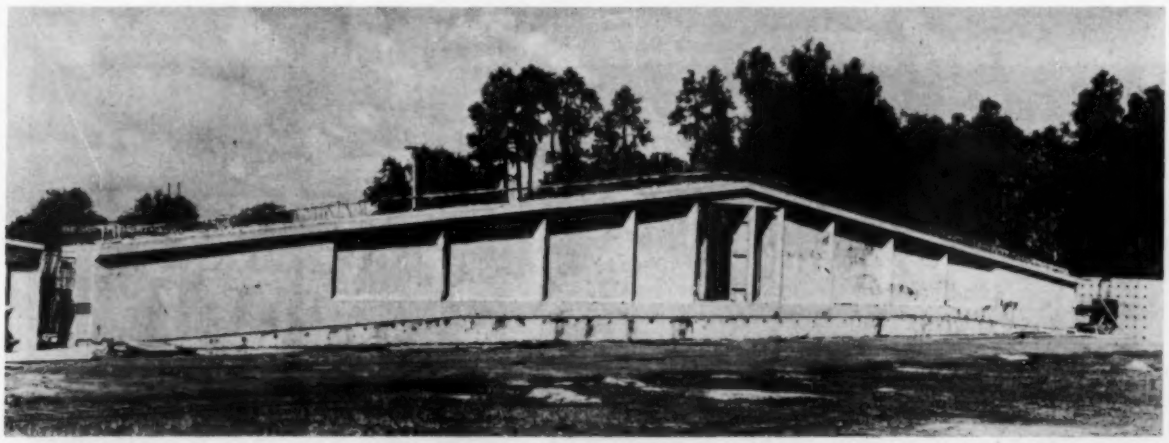
Generally, an urgent need for it for economic or practical reasons dictates the acceptance of any new design system. This was the case with prestressed concrete, first in Europe and South America, where the scarcity of structural steel and the availability of cheap labor were factors underlying the initial development of a new system which would later utilize to the fullest extent the capabilities of high-tensile, stress-relieved, multiple-wire steel strand. It remained for the American makers of this type of cable to vastly improve on the early efforts of European designers using the relatively high-strength rod and post-tensioning it individually in the structural member.

As succinctly described by J. C. Rundlett, bridge engineer, Department of Public Works, Boston, Mass., at a meeting of the Boston Society of Civil Engineers, in May, 1955, the way was paved for the first new reinforced concrete design since the rigid frame came into prominence over 30 years ago. Mr. Rundlett said: "Since 1951, with few exceptions, the development has continued in the moderate-length, transportable-sized beam class, trying out all various types of stressing elements, experimenting with pre-tensioning and post-tensioning, and with combinations of both, combinations of longitudinal and lateral prestressing, all seeking the simplest, cheapest and most practical method of stressing and the most favorable shape to obtain the lighest weight of beam."

Progressively, the way was found to stress multitudinous wires simultaneously, to retain the stress placed in the strands, and to transfer effectively the tensile force in the strands to compression force in the concrete when it was strong enough to take this. These steps involved the development of many devices for tensioning, for anchorage and quick release of the strands, and a virtual agreement as to the suitability of the now widely adopted 7-wire, high-tensile, stress-relieved strand for the retention of stresses.

While not desiring to belittle the efforts of any producer of these devices or materials by omission, the names of Freyssinet, Magnel, Roebling, Stresssteel, American Steel & Wire, Union Wire Rope, Form-Crete, Elgood Materials, Prestressed Concrete Corporation, etc., come to

(*Continued on page* 380)



One of the eight 101-ft. long, 71-ton prestressed, pre-tensioned girders produced by Prestressed Concrete, Inc., Lakeland, Fla., for the American Cyanamid Company's storage warehouse at Brewster, Fla. These members have a height of 12 ft. at the center and 4 ft. at the ends. The width of the top slab is 3 ft. Each girder contains 36 cu. yd. of concrete and 2½ tons of prestressing wire and reinforcing steel. The concrete is standard 6,000 p.s.i. mix using No. 12 stone aggregates, and is steam-cured to 4,200 p.s.i. before release of prestress. Seven-wire strands, 48 in each girder, of 7/16-in. diameter, were stretched in a 422-ft.-long bed in two rows sufficient for four girders each. After setting of Form-Crete steel casting forms on one side of first girder and one-half of second, production of four girders every four days was obtained. A tension of 900,000 lb. was placed on the pre-stressing wires, producing a temporary camber of 5/8-in. at center. This will be brought to a neutral horizontal position when the dead loads of 20 tons will be placed on each girder in the final construction. Design and engineering work was done by Lakeland Engineering Associates, Inc., of Lakeland, Fla.

George W. Katterjohn (left), president of the Southeastern Concrete Masonry Association, greets Earl Peterson, president of N.C.M.A., at th meeting in Miami, Fla.

S. E. Block Manufacturers Hold 13th Annual Meeting

industry discussions and recreational features make a happy combination

M. E. (Doc) Rinker (left), West Palm Beach, Fla., congratulating H. Samuel Kruse, Miami architect, upon an instructive speech he has just delivered.

Another ON THE SPOT Report

By ROY L. PECK

THE 13th annual meeting of the Southeastern group of the National Concrete Masonry Association, held at the Eden Rock Hotel, Miami Beach, Fla., on November 14 to 16, offered the 250 persons attending a program which was nicely balanced as to business and recreation. The morning meetings of the three-day event held subjects of great interest to all producers, embracing in part architectural decoration with concrete block, sales promotion, an architect's frank appraisal of the industry, governmental activities, labor relations, and technical discussions.

One afternoon was devoted to a sight-seeing trip to the nearby "Seaquarium." The route to and from this well-known exhibit passes through the fabulously-built sections of Miami and Miami Beach. Another afternoon, free of business sessions, presented many opportunities to inspect local block and prestressed concrete facilities in the vicinity. It was surprising how many block men evidenced interest in the latter newest development in concrete, in which Florida takes first place among all states.

A majority of those present were accompanied by their wives, who were most appreciative of the program committee's choice of the finest of Miami's hotels. Splendid facilities were available for sun-bathing and

The Miami Beach shoreline looking toward the large building at the right center, meeting place of Southeastern Concrete Masonry Association at the Eden Roc Hotel.

President Katterjohn (center) with Theodore Leba Jr., manager, N.C.M.A., Washington office, and Edward Mangotich, design engineer, N.C.M.A.

other typical recreational activities of the region.

The entire meeting was sparked, as usual, by the perennial exuberance of George W. ("Katterblox") Katterjohn of Paducah, Ky., the genial president of the group. Ably assisted by a corps of representative producers serving on the program committee, Mr. Katterjohn was never inactive in his endeavors to make everyone enjoy his stay in Florida.

At the initial business session, after an invocation by Dr. Lewis N. Head, pastor of the First Methodist Church, Coral Gables, and a welcome to Florida by Thomas F. Smith, director of the Convention Bureau, Miami Beach, Fla., a number of representative block makers from various sections of the Southeast were asked their opinions of business conditions in their respective areas.

Business Conditions

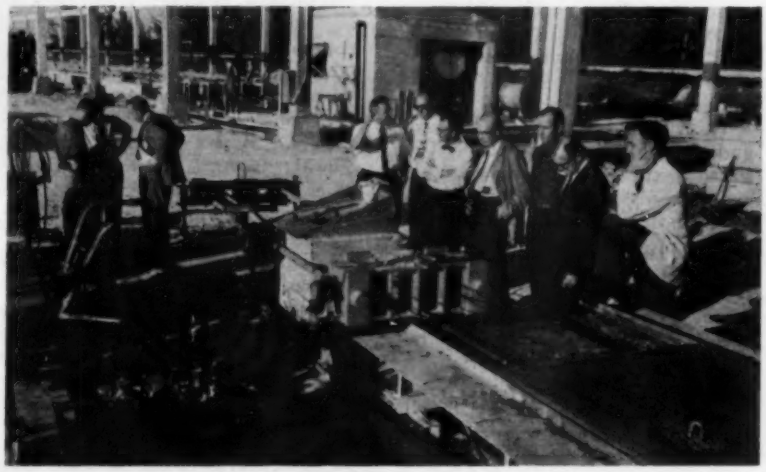
Hal Thurmond, Blue Lake Block Company, Hopkinsville, Ky., claimed that his 1956 business would probably be 5 percent above the volume of the preceding year. He said that construction was very active at present, and accorded much of this activity to the expansion of the nearby Fort Campbell army facility, which required large amounts of concrete blocks for the new buildings. He felt that next year would see a continuance of good volume.

A producer from New Orleans felt that the block business there was going through a transition period from a satisfactory to a smaller volume in the future, accompanied by some price-cutting. He said that the employment of a full-time secretary, Fred Dent, by the local group should help in correcting both conditions in the near future.

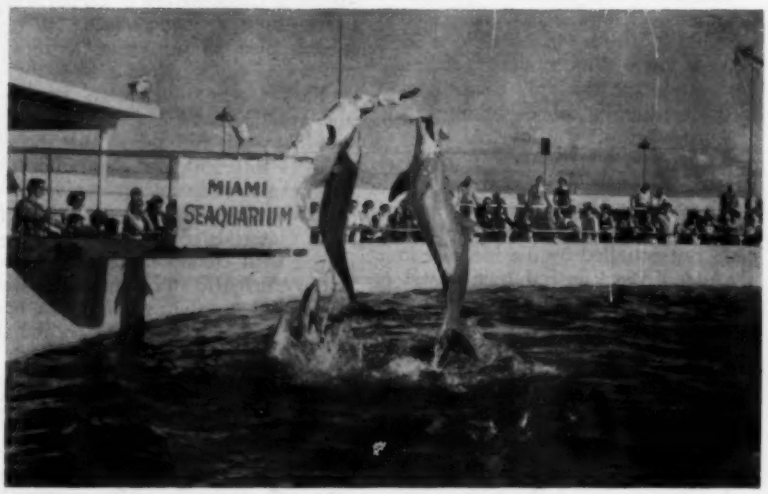
Dale Cobb, Jackson Ready Mix Concrete, Jackson, Miss., reported that the market in blocks is still in the growing stage in his area, in that the product still has to be actively promoted to architects and engineers, to get a satisfactory volume. School use is still high, he said, and this in part accounts for maintaining a fair amount of block business. Mr. Cobb expects a state regional group formed recently to effect a closer co-operation among block men there.

F. Paul Anderson, Maule Industries, Miami, Fla., reported business continuing at the usual high level. Recent block installations at the Homestead Airbase were made under U.S. Corps of Engineers Specifications. Some producers had trouble meeting the moisture content requirement of this specification, due to the conditions of high humidity

A group of block men who are interested in prestressed concrete visited the Dania, Fla. plant of R. H. Wright & Son. We recognize in this group Rex Hartup, Bill Bartlett, Nate Levine, Hal Spaight, Dale Cobb, Fred Reinhold, and Henry Pommer.



Visitors watching one of the largest prestressed concrete operations in this country, at the Dania plant of R. H. Wright Company.



Most of the group took advantage of the trip to the famous Miami Seaquarium to watch these playful porpoises.

at the site. This low maximum of 30 percent moisture content which was in effect has now been discarded, and in its place there has been substituted the requirement that the units be in an air-dry condition. Under the new specification the moisture content may vary from 40 to 15 percent, depending upon the average annual relative humidity in the area in which the blocks are to be used. This is the first time such a method has been employed in a specification. Mr. Anderson also stated that his company had acquired the assets of Burnup & Sims, West Palm Beach, Fla., on November 1.

According to Henry Pommer, John A. Denie's Sons Company, Memphis, Tenn., block business in this area is currently off about 20 percent from that of a year ago, but he feels that prospects for next year should help erase this deficiency. He said that a price increase of 15 percent in cement in the Memphis area had in some measure been responsible for the decreased volume of 1956.

W. R. (Bill) Ireland, Atlanta Aggregate Company, Atlanta, Ga., stated that Georgia producers had experienced some fall-off in business in the latter half of 1956. Decrease in housing volume was not balanced by a slight increase due to new school construction. He feels that the overall quality of concrete block units is now higher than ever before, but that some difficulty had been encountered in meeting moisture contents previously required by the Corps of Engineers specifications. He said that over-production in some areas and the advent of several new plants partially accounted for the lower volume experienced.

Hamilton Lott, Palmetto Quarries Company, Columbia, S.C., declared that block business in his state is 35 percent lower than in the preceding year, and that the only bright spot is the continuing school volume.

A representative of the Alabama Cement Tile Company, Montgomery, Ala., reported a good year of business, but said that there has been a sharp drop in residential construction, not equalled by the increase in the use of block in industrial installations. The fact that the quality of units has appreciably bettered in late years has resulted in an overall acceptance which is encouraging.

In reviewing these accounts of business in various sections of the South, George Katterjohn said that while some areas are showing lower volumes, in general the picture remains satisfactory. He added that this volume, however, is not producing the profit return expected, and cautioned against price cutting, which has occurred in certain areas where a drop in volume has been experienced.

Haakon Paulson, sales manager, Besser Company, Alpena, Mich., and Mrs. Paulson were among the group visiting the Miami Seaquarium.

R. D. Roberts, vice-president, Florida Light & Power Company, Miami, Fla., presented a very interesting talk on *Florida and Its Future*. He stated that according to the latest figures from the Bureau of the Census, Florida is the fastest growing state in this country, having gained 89 percent in population in the last 20 years. He illustrated his talk with a series of slides and a motion picture depicting various phases in the growth of the state.

Architectural Beauty Miss Elizabeth Gordon, editor, *House Beautiful*, New York, N.Y., talked on *Concrete Masonry Construction — Opportunities Unlimited*, in presenting an inspiring plea to the concrete block makers to incorporate into their product more architectural beauty. She said she had observed that in the lobby of the Eden Roc hotel some 14 different masonry materials had been used in an impressive array. She feels that a majority of these materials could have been replaced with concrete masonry units, just as efficiently and beautifully. She urged that a "styling" program accompany the N. C. M. A. technical program in the future.

Miss Gordon showed slides illustrating new architectural decoration achieved in concrete block construction and posed questions for the producers to consider as to whether other effects can be so incorporated. These included three-dimensional effects, ground surfaces, glazed surfaces, plastic coatings, intaglio and/or shadow effects, integral coloring, etc. She added that many of these effects will be built into the concrete block house at Ponta Vedra, Fla., to be featured in the January, 1957, issue of *House Beautiful*, as the "House of the Year."

Promotion Plans *The Keys to Expanding the Markets for Our Product* was the theme of a factual talk by William P. Markert, director of promotion of N.C.M.A., Chicago. He explained that the twin keys were production and the ability to sell the output in today's greatly expanding market. He reviewed progressive changes which have occurred since 1929, considered the greatest "boom" year, saying that in the concrete masonry industry the output has doubled since that previous record period.

Research for promotion purposes is mandatory today, Mr. Markert declared, since the industry must parallel the efforts of its competition, which is now stronger than ever before. New functional concepts must be developed and sold to the consuming public on the products already accepted as structurally satisfactory. With 16,000,000 more people at work than a few decades ago, and with half of the existing houses over 30 year old, he feels that there is a vast potential market available for the product. Mr. Markert cited cases of competitive efforts in promotion and in a detailed review told his audience of the promotion work N.C.M.A. is now doing, and plans to do, in the future.

At the luncheon meeting the speaker, Dr. Russell A. Williams, vice-president of the Biscayne Federal & Savings Bank, Miami, asked those present to "count their blessings," in an inspiring address on *The Treasures of Life*. Throughout his talk, Dr. Williams drew many smiles specifically comparing problems occurring in the concrete industries with everyday problems, and told of solutions found for them by the application of his philosophy.

Peterson's Message Earl W. Peterson, president, N.C.M.A., saluted the Florida contingent of the national association for having increased business volume 25 times during the last 15 years, as compared with the national increase of only five times in the same period. He said that this record is especially commendable now, in a time of expanding economy, when it is easy to

(Continued on page 356)

"RCA RADIO REDUCED OUR OVERTIME 20-30% PER MONTH"

(Above) Mr. Clarence Goetz, Vice-President, Clifton Concrete & Supply Co. and (below) one of the radio-equipped Clifton trucks.

—*Reports* **CLARENCE GOETZ**
Clifton Concrete & Supply Co.
Cleveland, Ohio

"It's the greatest thing that has happened to the industry since the advent of the high-dump mixer truck! RCA Radio has reduced our overtime anywhere from 20 to 30 per cent per month. We've made extra profits by being able to close our plant earlier at night."

And he continues:

★ Greater volume of production is possible. Ten trucks, radio-equipped, are equal to 11 trucks.

★ Efficiency in dispatching trucks makes entire operation more efficient. Drivers are supervised at all times, reducing unnecessary trips and delays.

★ Drivers like 2-Way Radio. It relieves them of responsibility—they get answers to questions immediately without having to stop to telephone.

★ RCA 2-Way Radio assures much better service. It not only makes money for us—it makes money for our customers.

Why are the leaders choosing RCA 2-way Radio?

Most of them say they are impressed by RCA's fine service organization and the years of RCA leadership in radio and electronics. Look for these marks of quality: Superior crystals, tubes and microphones for clearer talking, longer life . . . heavy gauge steel case for rugged service . . . color-coded tuning for simplest maintenance . . . expert service by RCA Service Company to assure peak performance.

DISPATCHER 2-WAY RADIO TO DRIVER

Get the whole story—Mail Coupon

RADIO CORPORATION of AMERICA
COMMUNICATIONS PRODUCTS
CAMDEN, N. J.

Radio Corporation of America, Communications Products, Dept. N-290, Bldg. 15-1, Camden, N. J. In Canada: RCA VICTOR Company Limited, Montreal.

☐ Please send me complete information on the use of 2-Way Radio in my business.

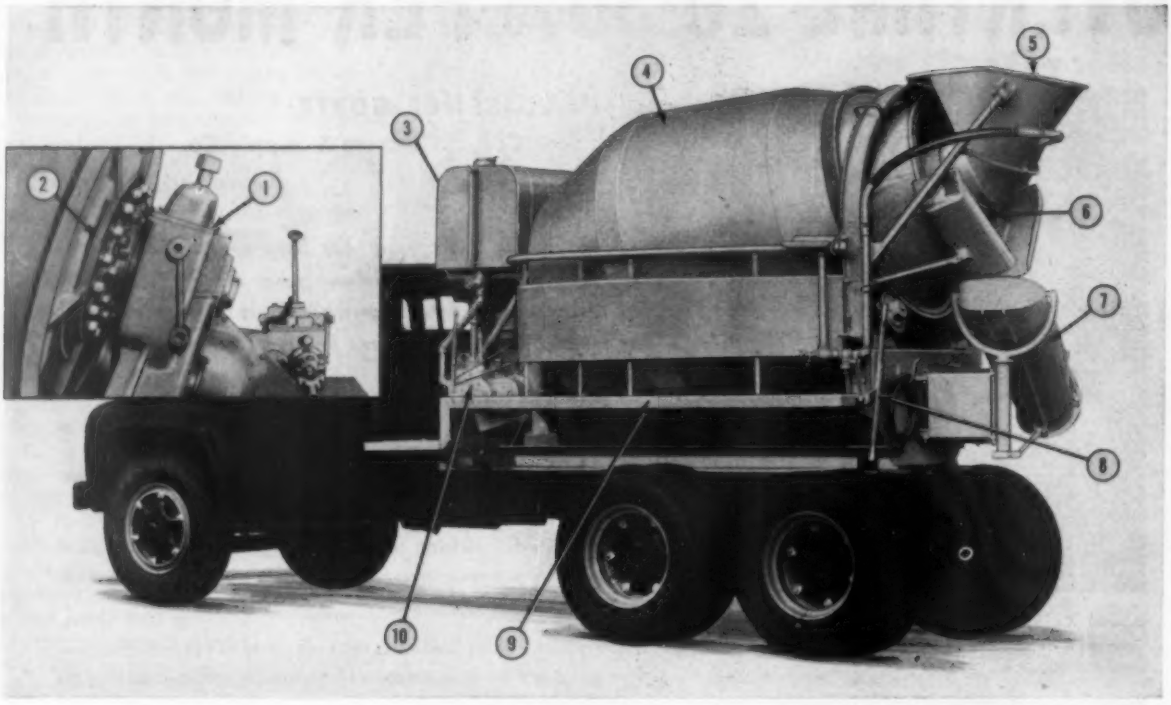
☐ Have RCA Communications Specialist make a free RADIO SURVEY of my business.

NAME_____

ADDRESS_____

CITY_____ STATE_____

WESTINGHOUSE...



Here's what you get as Standard Equipment

1. Exclusive enclosed-gear drum drive—no exposed gears or chains to wear out or break.

2. Big ball-and-socket drum mounting *at drum.* Absorbs all drive misalignment due to frame weaving—none gets to driving parts.

3. Front-mounted engine (Continental or Chrysler) complete with starter, generator and battery.

4. Double-action mixing drum with deep spirals and 6 auxiliary blades. Produces fast, thorough mix.

5. Big 32″ x 34″ hopper takes fast charge. Saves time.

6. Large 36″ drum opening permits fast, easy discharge.

7. 3-piece fold-over chute can be swung aside for direct discharge or can be used in 5, 8 or 12 ft. lengths.

8. Single lever controls drum rotation in both directions—no gears to shift. Lever and adjacent engine throttle at both ends.

9. Safety-tread platforms and splash (mud) guards on both sides.

10. Two-speed transmission provides wide range of drum speeds for slow agitating and pouring up to fast charging and discharging.

Westinghouse Mixers are simple, clean-cut and convenient in design—easy to operate and easy to service. They are more sturdy and longer-lived than most and give you more value per dollar. Built to NRMCA standards they are available in 4½ to 6½ yd. sizes with water systems and other equipment desired.

See your local Westinghouse Transit Mixer dealer for new 1957 highly-illustrated catalog or write now to:

TRANSIT WESTINGHOUSE MIXER

WESTINGHOUSE TRANSIT MIXER DIVISION
LeTourneau-Westinghouse Company, Indianapolis 6, Indiana
Member of National Ready Mixed Concrete Association

Your Best Mixer Value in 1957

FAST CHARGING—Westinghouse Mixers have large cone-equipped hoppers which shoot charge directly to mixing portion of drum as fast as you want to put it in, and—without spillage.

FAST, THOROUGH MIXING—Due to "double-action" mixing blades, on-the-job mixing is faster—saves valuable time. Your customers will like the Westinghouse uniform mix too.

FAST DISCHARGING—Because of large drum opening your Westinghouse will discharge fast when desired—again saving time on your trip cycles.

DISCHARGE CONTROL—A wide range of drum speeds allows slow and accurate pouring into small forms, wheel barrows, etc., within efficient engine operating speeds.

LOW SLUMP CONCRETE NO PROBLEM—Here a Westinghouse is pouring 1½" slump for a private swimming pool. Concrete is troweled up sides so has to be stiff.

CLIP AND MAIL COUPON TODAY . . .

Westinghouse Transit Mixer Division,
LeTourneau-Westinghouse Co., Indianapolis, Indiana

Please send new illustrated catalog
on Westinghouse Transit Mixers.

Name .....
(PLEASE PRINT)

Company .....

Address .....

City ..... Zone ..... State .....

CM

S.E. Block Mfrs.

(From page 352)

overlook that future day when all the ingenuity, planning, and resources available will be needed to combat the encroachment of other materials in the building field.

He cited several cases illustrating what other trade associations are doing to promote competitive masonry units having uniform color, greater stability, and lighter weight. He reminded his listeners that the annual dues of member-producers in one competitive masonry association are 1½ percent of gross sales, compared with the nominal amount of N.C.M.A. dues. He quoted from an editorial in The CONCRETE MANUFACTURER which urged a common-sense approach to the ever-present problem of increasing N.C.M.A. membership, characterizing the trade association as the greatest protector of small business. He listed the main functions of a trade association as follows: creating a demand for the product, improving it through research, affording technical assistance in the elimination of product faults, representing the rank and file of the industry at high national levels, and attending to the public relations of the group.

Producer-Architect Relations Edward Mangotich, design engineer, N.C.M.A., Chicago, spoke on *The Block Producer and the Architect,* telling what an important part the architect will play in the $40,000,000,000 construction market expected in 1957. How to arouse the interest of the architect and provide him with the technical information he requires to specify concrete masonry, is the primary task of every producer. Mr. Mangotich outlined the data which must be so provided, and showed how the association is transmitting this information in the form of bulletins which members may pass on to architects. He also described various tests carried out by N.C.M.A., including those on cavity walls, shrinkage of blocks, and structural behavior of concrete masonry walls.

In addition, he advised producers to make sufficient strength tests and volume change determinations on their product at regular intervals to be sure of the physical characteristics of the block they make. He feels that much of the information being determined at the local level is not reaching the hands of the architects, since so many architects write to the association for construction data the producer should supply direct. He urged that each block man should consider this type of promotion as an individual effort of great value to him.

Architect's Viewpoint H. Samuel Kruse, associated with Watson & Deutschman, architects and engineers, Miami, Fla., presented a straight-from-the-shoulder appraisal of the concrete block industry in terms of the efficiency of its promotion to the architect. In his public relations work with the local chapter of the A.I.A. Mr. Kruse has accumulated a storehouse of experience in assessing the appeal of various materials offered to architects for use in construction.

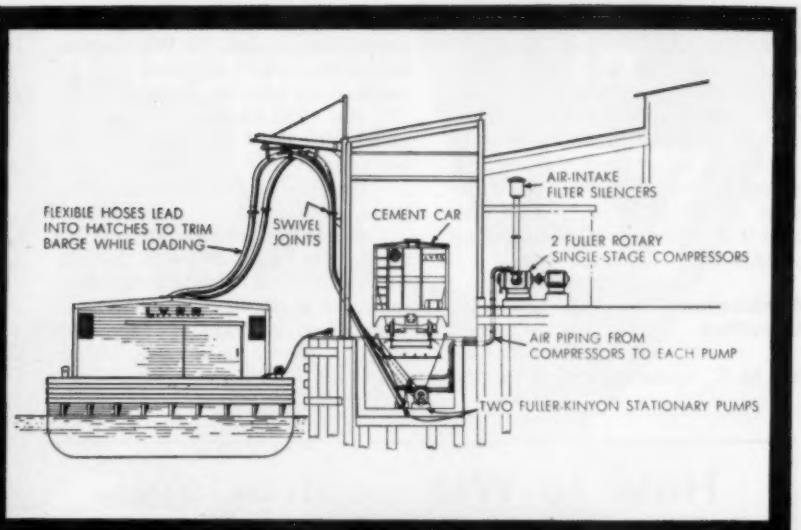
He declared that an architect must satisfy both science and aesthetics in the choice of these materials, and also make use of the additional elements of color, texture, and other architectural features. He classified all architects as belonging to one of three categories — traditional, natural, and "high-style" — and described these various philosophies of design which must be taken into account in trying to sell them concrete blocks. The five common characteristics of all three classes should be known to all producers of materials.

First, he said, all architects sell personal service, and as a commodity, their time must be conserved when they are importuned to use any particular material. Second, architects are suspicious of unfounded claims and cannot afford to gamble their professional judgment on a salesman's claim or "slick" advertisement. Mr. Kruse urged that an architect should be given all available information on a product, so that he can analyze it and reach a balanced decision. Third, he admitted that most architects are conceited, in the sense that they feel that all the good things in a design are the result of their personal genius. Let the architect think he alone makes the decisions, based on the data furnished him. Next, every architect expects full and detailed answers to his questions. Producers should be prepared to furnish these and should not rely on the printed brochure to get anything but his attention. Finally, architects, like all other people, love pictures. Pictures alone, he warned, will not sell a product, but they are of primary importance as a sales tool. The architect is concerned with how well your product fits into his design.

Mr. Kruse detailed the many steps which go to make up the final choice of one product over another in an architect's office. He showed several

No Matter What
SIZE...
No Matter What
SHAPE...
A Quinn Concrete Pipe Form Will Produce The Best Pipe!
THE "QUINN STANDARD"
Over 50 years of experience and "know-how" go into the production of every Quinn Concrete Pipe Form. That's why the Quinn Heavy Duty form is recognized as the STANDARD design the world over for producing highest quality concrete pipe at the lowest possible cost. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 12" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired.
No matter what size, shape, or length you need, there's a Quinn form made to fit your requirements. That's why hundreds of pipe manufacturers, from the smallest to the largest, call on Quinn for all their concrete pipe form needs.
FREE! New Quinn Pipe Form Catalog
Illustrates our complete line of equipment. Contains pages of valuable tips on making concrete pipe. Write today for your free copy and estimates.
Quinn
WIRE & IRON WORKS
BOONE, IOWA
Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

Fuller-Kinyon Remote-Control Unloader on barge, for unloading cement at destination.


FLEXIBLE HOSES LEAD INTO HATCHES TO TRIM BARGE WHILE LOADING
SWIVEL JOINTS
CEMENT CAR
AIR-INTAKE FILTER SILENCERS
2 FULLER ROTARY SINGLE-STAGE COMPRESSORS
AIR PIPING FROM COMPRESSORS TO EACH PUMP
TWO FULLER-KINYON STATIONARY PUMPS

With Fuller-Kinyon Conveying System: LEHIGH VALLEY HANDLES 4 TIMES MORE CEMENT

Barge in position for loading by Fuller-Kinyon Pumps under car in shed.

To keep ahead of the great demand for bulk cement in the New York City metropolitan area, the Lehigh Valley Railroad has installed, at its Jersey City terminal, a Fuller-Kinyon conveying system. This basically simple system makes it possible for the Railroad to handle four times more bulk cement, via hopper cars and barges. Conveying costs, along with loading and discharging time, have been reduced 50%.

Two Fuller-Kinyon stationary pumps, located in a pit underneath railroad tracks, handle the cement discharged by gravity, from hopper cars. The cement is transported through two 8-inch pipe lines to the barge at a rate ranging from 900-1,000 bbl. per hr. (this is better than 700 bbl. per hr. over the old system). Air for conveying is furnished by two C-120 Fuller rotary single-stage compressors.

A Fuller-Kinyon Remote Control Unloader is used to unload the barge at its destination. Self-propelled and portable, it discharges the cement at a rate of 115-150 bbls. per hr., using shoreside power at the unloading point.

It's as simple as that. Fuller-Kinyon systems are conveying bulk cement under highly varied conditions all over the country. Conveying costs go down, conveying volume goes up, wherever and whenever they are used. Call on Fuller for the bulk movement of any dry pulverized material. We'd like to show you, as we have shown others, the benefits enjoyed when a Fuller-Kinyon conveying system goes to work for you.

VISIT US AT THE CONCRETE INDUSTRIES EXPOSITION
KIEL AUDITORIUM ST. LOUIS, MO.
BOOTH NO. 81 & 82 FEB. 25-28

FULLER COMPANY
GENERAL AMERICAN

Fuller
...pioneers in harnessing AIR

FULLER COMPANY
100 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Chicago · San Francisco · Los Angeles · Seattle · Kansas City · Birmingham

P-165
3049

examples of good and bad practice in advertising literature issued by various companies, and enumerated certain items which must be included in "architectural" advertising to properly impress the architect. In conclusion, he stressed the need of presenting a product from the viewpoint of the architect, rather than from that of the producer, promising benefits from this procedure.

Washington Activities Theodore Leba, Jr., manager, Washington, D.C., office of N.C.M.A., spoke at length on the contacts of N.C.M.A. with governmental departments in Washington. Due to the lack of adequate time, he confined his remarks to three topics: (1) the 1954 Census of Manufacturers, (2) the U.S. Corps of Engineers new Guide Specifications, and (3) the current Federal Works Program.

Commenting on the first of these topics, Mr. Leba showed the statistics developed by the survey, which indicated in the seven years since the survey was last taken in 1947, lightweight concrete units have become dominant in the industry, and heavyweight units have declined proportionately. The production of 1,800,000,000 units valued at $342,000,000 in 1954 compares favorably with the 1,100,000,000 units and $180,000,000 in 1947. He pointed out that despite the fact that in virtually every other industry the costs of products have increased from 30 to 75 percent, the unit prices of concrete masonry have remained relatively unchanged in this seven-year period.

According to Mr. Leba, the C. of E. Guide Specifications has been radically and extensively revised. In his talk he reviewed the highlights of these changes, illustrating each with slides and comments. Some of the changes mentioned include the following:

1. Applications of concrete brick and split block has been provided for, so that concrete may compete with clay brick veneer.

2. The test for linear shrinkage has been changed from the Rapid Method to the Modified British Method, so that the values of the maximum potential shrinkages properly become a function of the density of the concrete.

3. An Underwriters' Laboratory certification no longer is a prerequisite for the acceptance of block in fire walls; any report from a recognized testing laboratory will in the future be sufficient certification.

4. The 30 percent moisture content requirement has been replaced by a requirement that the units be in an air-dry condition.

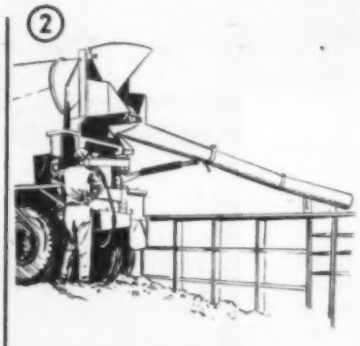
5. Changes were made in instructions telling the designer how to incorporate crack control measures in structures.

6. A definite stipulation has been made as to the requirements for bond beams.

The contemplated Federal Works Program, Mr. Leba said, is the greatest peacetime construction effort in the history of mankind, involving the construction of some 99 projects, which will cost over $700,000,000. Originally designed for "pump-priming," in case the economy of the country should sag, this program has now become an actual necessity. All of the buildings in the program will be designed by architects in the local area in which the work will be done; and in each case the local architect can use his discretion as to the type of materials he wants to use in the building. Therefore, he said, it behooves area block producers and local associations to promote concrete masonry with these architects, to insure that their products will be in-

How to Win Contractors and Influence Profit!

Hello, Ready-Mix? How soon can you start delivery? We've got to make up some lost time!

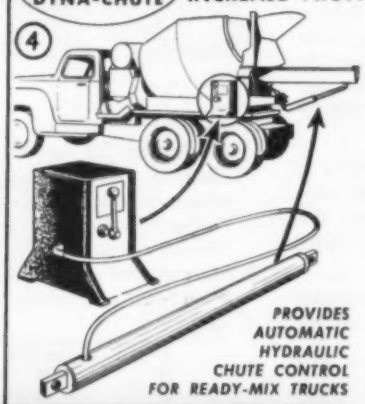


Operator: These Dyna-Chute units certainly speed deliveries — and I can handle the job all alone, too!

Good work, Pete, you're back early. That's the kind of service that keeps customers happy!

MONARCH DYNA-CHUTE

SAVE WORK INCREASE PROFIT

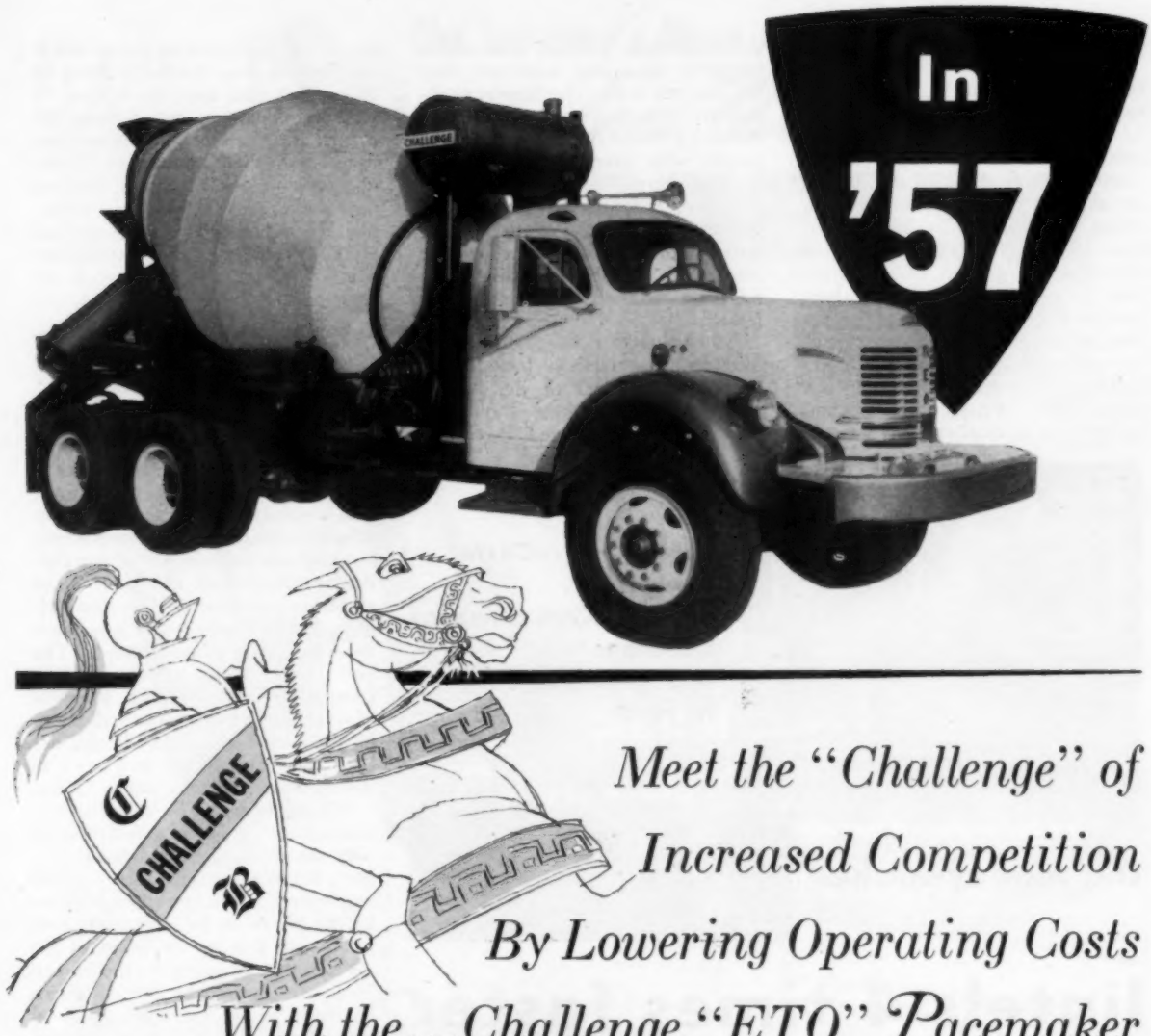


PROVIDES AUTOMATIC HYDRAULIC CHUTE CONTROL FOR READY-MIX TRUCKS

SEND FOR FREE FOLDER

MONARCH ROAD MACHINERY CO. 1856 100 1956

1331E MICHIGAN ST., N.E. — GRAND RAPIDS 3, MICHIGAN



Meet the "Challenge" of Increased Competition By Lowering Operating Costs With the...Challenge "ETO" Pacemaker

The Challenge "Engine-Take-Off" (ETO) will help you meet rising costs and tougher competition during 1957 . . with

GREATER PROFIT PER MIXER . .
By using the truck engine to power the mixer, there is a great savings in fuel and a substantial reduction in service and maintenance costs.

GREATER JOB FLEXIBILITY . .
Size for size, Challenge "ETO" Mixers weigh less than any separate engine mixer and the design gives better weight distribution on shorter wheelbase trucks, resulting in greater maneuverability. With the Challenge "ETO" you can get on and off more jobs easier and faster with larger loads.

ONE SOURCE RESPONSIBILITY . .
The Challenge "ETO" is a complete assembly, including power-take-off and drive lines, ready for easy installation on any make truck. Made for 5, 5½, 6, and 6½ yard sizes, Challenge "ETO" Pacemakers are available for immediate delivery (or installation on your truck) from the Challenge plants in Los Angeles, California and Bryan, Ohio.

COOK BROS.
EQUIPMENT COMPANY
Exclusive worldwide distributors for
Challenge "Pacemaker" Truck Mixers
3334 San Fernando Road, Los Angeles 65, Calif.
Telephone: CLinton 6-3151

THE ONLY TRUCK ENGINE DRIVEN MIXER PROVED BY 6 YEARS OF FIELD SERVICE

corporated in the specifications.

Southeast Future Philip W. Moore, First Research Corporation, Miami, told of the great growth in this section of the country over the past decade, basing his summary on the Southeastern urban communities having populations of over 100,000. Many factors influence the growth of an urban area, he said, especially where there has been a rapid influx of people from other parts of the country, as has occurred in Florida. He reminded the producers that they are a vital part of a basic and important industry, individual entrepreneurs in the tremendous building boom which has gone on in the Southeast over the last ten years. The biggest problem in Miami is to weld a community from the many different people who have come here. The economy here is young, however, and this very youthfulness has its advantages. Mr. Moore related his formula to keep from growing old, the points he enumerated whimsically referring to the concrete masonry industry.

Florida Operations Neilson Jones, president of the Florida Concrete and Products Association, covered the formation of the dual-purpose group which was formed after the last meeting in Miami. At that time there were 75 ready-mix members, representing 100 plants, and the block producers now joined with them operate 58 "three-at-a-time" block machines, turning out about 290,000,000 units annually. He introduced Paul Lenchuk, secretary of the group, as mainly responsible for the growth of the association.

Labor Relations Don Paul, attorney, Miami, told of the inroads which the Teamsters' union has made into the concrete masonry industry in the last 15 years. This union, he said, has a "jack-pot" of several million dollars and tries to unionize an entire area at a time. The owners of those plants not yet affected should not be complacent; however, the unionization of any particular plant is not inevitable, since employer resistance to the union's efforts has stiffened, especially since the change in administration. The last election shows a new trend in labor relations, when the members of unions practically returned Eisenhower to the presidency. People are becoming increasingly mature in their attitude toward union tactics.

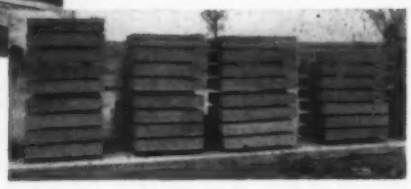
He presented many valuable suggestions for producers to follow when they are approached by labor organizers. He recommended that a trusted employee co-ordinate labor relations in the plant, as the organizers generally will first try to influence the workers before going to the owner. Next, the producer should check carefully as to the background of all persons hired. It is better, he said, not to employ avowed union sympathizers than to have to weed them out after they have talked with their fellow workers.

Another suggestion concerned keeping adequate employee records, which will be found invaluable in later discussions with labor organizers. Mr. Paul advised frequent meetings of employees, to include the wives of workers, at which full discussion of economic problems can be held. All pertinent employee records should be carefully filed, to prevent any disclosures of information as to employee addresses, etc., usually sought by organizers.

Mr. Paul stated that a good brochure fully explaining the true position of the company as to labor relations, is a valuable ally to put into the homes of employees. He cited the public relations brochure of the Maule Company as an excellent example. Finally, he urged that

(*Continued on page* 367)

photos of PreCaster in plant of Schuster Coal Company Indianapolis and lintel inventory in yard

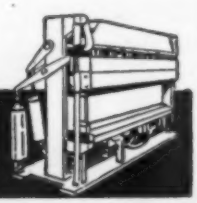


the money-maker

lintels 4 times faster

- Mr. Charles W. Braughton, proprietor of Schuster Coal Company, writes:
- "We have found that we can make as many lintels on the *PreCaster* as we wish per day, with no trouble at all. We can now make four (4) times as many lintels per day, with two (2) men, than was ever possible before with the help of many men."
- "Our customers especially like the lintels from the *PreCaster* because they are truly square and the texture is much finer. We are making a better lintel on the *PreCaster*. So, it is *always in demand!*"
- If *"specials"* are a problem at your plant . . . if you are turning down business because your equipment is not flexible . . . then you certainly ought to take a look at what *PreCaster* can do for you. Write today to PreCaster Inc., 5217 Beech Street, Cincinnati 17, Ohio.

You are cordially invited to see the PreCaster at Booth 44, NCMA, St. Louis, February 25-28!

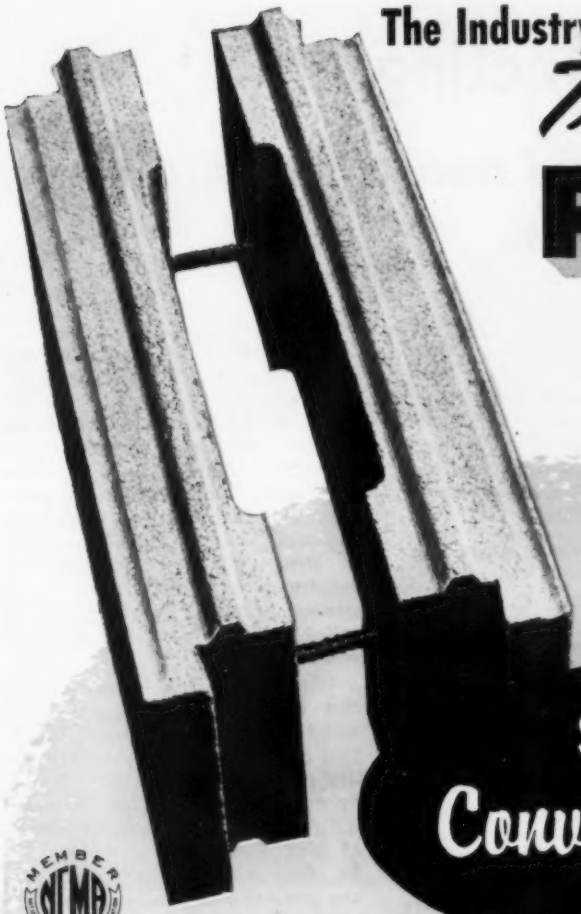


PRECASTER

The Industry's Most Advanced Building Unit

True "Air Cavity"

PRESTO BLOCK



SEE HOW IT'S **MADE**

SEE HOW IT'S **LAID**

See it at the NCMA Convention in St. Louis

Feb. 25 thru 28th, 1957

MEMBER NCMA

Construction Superiority

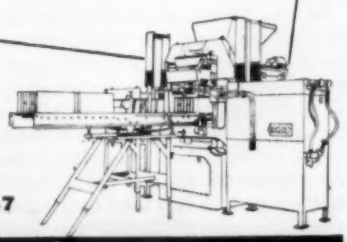
See how easy Presto Blocks lay up into a perfectly insulated self-aligning wall with features that mean stronger, more beautiful concrete block structures. See why Presto Block's twin wall construction means built-in moisture, sound and climatic insulation at its best.

Automatically Produced

See why the electronically-controlled, hydraulically-operated machines that produce Presto Block . . . at the same speeds and with the same aggregates as conventional block . . . are the finest, most advanced machines in the world today.

To the Concrete Industry —a sincere thanks!

Last September we announced the development of PRESTO BLOCK, industry's *first* and *only* automatically produced TRUE "AIR CAVITY" concrete building unit. After five short months, we are happy to report that our revolutionary product has gained *nation-wide* recognition with architects, builders, contractors and home-owners! And now PRESTO BLOCK takes this opportunity to say thanks for your interest . . . and your acceptance!



GET THE COMPLETE PRESTO BLOCK STORY and information regarding franchise manufacturing arrangements today. Wire, write or phone:

PRESTO BRICK MACHINE CORPORATION

Empire State Building, New York • **PEnnsylvania 6-1353-4-5-6-7**

©Presto Brick Machine Corp. 1957

COMPLETE CAVITY-WALL INSULATION AT LOWER IN-THE-WALL COST

A.C.I. Regional Meeting

features prestressed concrete, winter concreting, and inspection trips

FEATURING technical reports of particular interest to eastern Canada and northeastern United States, the American Concrete Institute's ninth regional meeting held in Montreal, October 24-27, drew an attendance close to 500. This was the Institute's first regional meeting to be held in Canada. The last annual A.C.I. meeting in Canada occurred in 1934 in Toronto.

Two days of technical reports were scheduled, followed by two days devoted to inspection trips of the St. Lawrence Seaway and plant visits. The technical sessions included reports on aggregate processing, prestressed concrete, bridge construction, testing, winter concreting, and, as to be expected, construction on the St. Lawrence Seaway project.

On the research side, Jean Chartrand, engineer, Department of Sales, Canada Cement Company, Ltd., Montreal, reported on the *Effects of Stone Sand Grading on Air Entrainment in Concrete*. Six stone sands with different gradings were prepared, each one having a predominant quantity of particles of a certain size. The six stone sands were then used in three groups of concrete mixtures in which one of the following quantities varied, the others remaining constant: (1) quantity of air-entraining agent, (2) percentage of sand to total aggregates, (3) cement factor, and (4) water content.

It was noted in the concrete without air entrainment that sand grading has a slight influence on the amount of entrapped air. The percentage of entrapped air increased as the percentage of sand increased.

In the mixes containing an air-training agent it was noted that as the percentage of sand to total aggregate increased, the percentage of total air increased, being partially an increase in entrained air and partially in entrapped air. The cement factor also influenced the air entrainment. In the type of mixes used in the tests, when the cement factor was high, little air was entrained. It was found that the quantity of air-entraining agent necessary to entrain air in a concrete made with manufactured sand is greater than that required in a concrete made with natural sand. In mixes with a predominant portion of the sand particles passing through the No. 100 sieve, it was found that excessive quantities of fines evidently prevent air entrainment.

Prestressed Concrete Four papers were concerned with various aspects of prestressed concrete. *Longer Span Prestressed Concrete Bridges — Design Concept and Economic Advantages,* by M. Schupack and Curzon Dobell, the Preload Co., Inc., New York, compared costs for various bridges (built and/or in the design stage) in prestressed concrete and structural steel, showing the advantages to be gained in long-span prestressed concrete bridges. Mr. Schupack compared cast-in-place and precast construction. Experience indicates that where cast-in-place construction is feasible, it is usually possible to get a structure that is structurally preferable and generally more economical. He also mentioned that in beams starting at about 120-ft. span the use of high-strength, lightweight concrete offers definite possibilities.

Some Unusual Feaures in Prestressed and Precast Concrete Applications, a paper by Philippe A. Benn, vice-president and chief engineer, Pre-Compressed Concrete Engineering Co., Ltd., Montreal, touched on design, manufacturing, and erection problems. Mr. Benn described how the St. Lawrence Cement Company is utilizing precast and prestressed concrete elements in the storage hall and two kiln buildings for its new plant. The buildings will require about 300 girders, and some 3,000 precast purlins. Roof slabs will be precast cellular concrete units.

A. M. Lount of T. O. Lazarides, Lount & Partners, Consulting Engineers, Toronto, illustrated the manner in which prestressed concrete has been put to practical use in bridge structures in Canada, in the paper *Practical Applications of Prestressed Concrete in Bridge Construction.* Although he emphasized various advantages of cast-in-place construction, he did not minimize the importance of precast prestressed concrete.

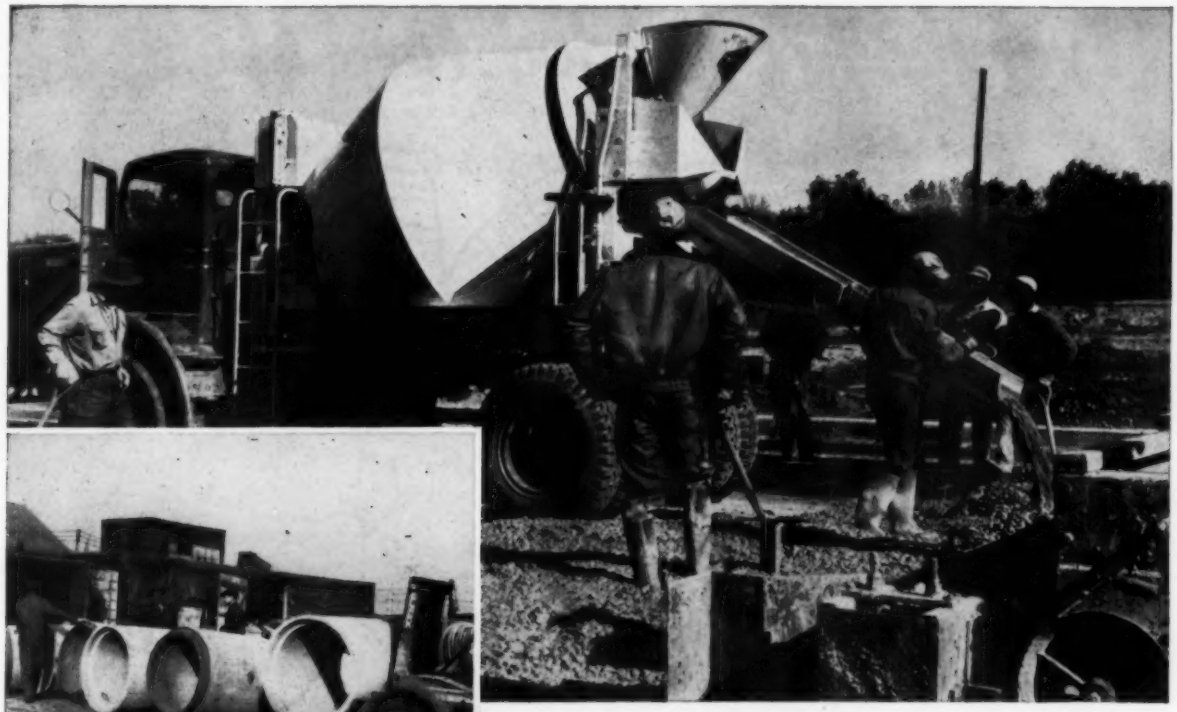
Where prestressed concrete has proven itself an economical construction medium, it has often done so by simplifying construction problems. He cited examples of simplification of formwork, of reinforcement, of structural steel (by composite construction and combination of prestressed concrete diaphragms with rolled steel girders), and reduction of construction time.

With particular reference to precast work, Mr. Lount noted that speed of construction is an important consideration in the selection of the material for a bridge. Precast prestressed concrete offers the possibility of prefabricating large sections of the superstructure while the foundations are being erected and the possibility of achieving speed by virtue of mass production.

Where suitable precasting facilities exist, precast prestressed concrete has developed rapidly, since prestressing greatly enlarges the range of applicability of precast concrete. Prestressed concrete, particularly in pre-tensioned units, lends itself well to mass production. On large bridges important savings are possible when prestressed concrete makes it possible to prefabricate on a production line basis.

Mr. Lount felt that there are great possibilities for the mass production of standardized bridge beam units. In the more densely populated areas, within a few years, there should be a sufficient market to permit a steadily developing use of mass-produced standard bridge units.

Research in this field of prestressing was covered in the paper *Flexural and Shear Tests on a Prestressed Concrete I-Beam,"* by R. H. Banks, Pre-Compressed Concrete Engineering Co., Ltd., and G. A. Jacobson, Aluminium Laboratories, Ltd. An 18-ft. concrete I-beam was constructed and prestressed under controlled conditions. Behavior of the beam under test indicated that present methods of design will produce struc-



For both ready mix and concrete products, the recommended quantity of Columbia Calcium Chloride for temperatures below 70° F. is 2 pounds of Regular Flake or 1.6 pounds of High Test Flake for each bag of cement.

in ready mix or concrete products

you get stronger concrete faster with COLUMBIA CALCIUM CHLORIDE

IN READY MIX

Ready mix producers can render a genuine service to customers by recommending the use of Columbia Calcium Chloride—especially at temperatures below 70°F. when the set and early strength of plain concrete are greatly retarded.

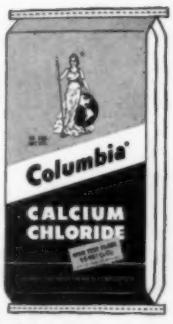
You can add Columbia Calcium Chloride to the mix either at your plant or on the job.

- **Makes initial and final set three times faster**
- **Increases early and ultimate strength**
- **Releases forms faster for re-use**
- **Cuts down on overtime**
- **Helps meet work schedules**
- **Increases workability**

IN CONCRETE PRODUCTS

Whether your concrete products are blocks, pipe, or precast units, the use of Columbia Calcium Chloride will improve production and lower manufacturing costs. Here are some of the advantages you gain by adding Columbia Calcium Chloride to your mix:

- **Reduces time required for initial set**
- **Gives higher early strength**
- **Reduces curing time**
- **Reduces cracking**
- **Allows for quicker handling**
- **Reduces breakage**
- **Permits earlier shipping**



Economical Columbia Calcium Chloride is available in 100 pound paper bags in Regular Flake, and in 80 pound paper bags HIGH TEST FLAKE.

Write today for complete information. Please specify whether your interest is in ready mix or concrete products.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago Cleveland • Boston • New York • St. Louis • Minneapolis New Orleans • Dallas • Houston • Pittsburgh • Philadelphia San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

Everybody's headed for St. Louis!

37th ANNUAL NATIONAL CONCRETE MASONRY ASSOCIATION CONVENTION

10th CONCRETE INDUSTRIES EXPOSITION

Kiel Auditorium, St. Louis
FEBRUARY 25-26-27-28

ALL THAT'S NEW in promotion and research! Big, new equipment and materials exposition! Coming up are four days which can add dollars to your profits, ideas for promotion, ways to cut costs—and a little fun besides. This is your chance to find out what's new in the block and ready-mix business, what your colleagues are doing, what you can do better in your own home town. Send your reservation now.

ADDRESS HOTEL RESERVATIONS:
Hotels Convention Reservation Bureau, N.C.M.A.
Room 406, 911 Locust Street, St. Louis 1, Missouri

NATIONAL CONCRETE MASONRY ASSOCIATION • 38 SOUTH DEARBORN • CHICAGO

Frank Kerekes, A.C.I. president (left), and Gerald Milsom, general chairman of the Montreal committee.

H. Isabelle, Canada Cement Co., Ltd., publicity committee; L. A. Gottheil, committee on inspection trips; and D. O. Robinson, Canada Cement Co., Ltd., Toronto representative.

S. F. Acker, Creaghan & Archibald, Ltd., membership promotion committee; Gerald Milsom; M. F. MacNaughton, technical program director; and J. F. Brett, consulting engineer, educational contacts committee.

H. Fred Senez, Mount Royal Paving Supplies, Ltd., committee on inspection trips; D. F. Nash, Dewey and Almy Chemical Co., secretary; James H. Royds, Drew Brown, Ltd., registration and entertainment committee; and R. O. Beauchemin, Beauchemin, J. A. & Associates, publicity committee.

tural members with an adequate factor of safety against failure, also that the deflection characteristics of a prestressed beam will insure adequate warning against accidental overload and good recovery characteristics.

Winter Concreting The final session was devoted to a panel symposium on winter concreting. Four short presentations by panel members opened the discussion, followed by a question-and-answer period with audience participation.

R. E. Heartz, president, the Shawinigan Engineering Co., Ltd., Montreal, served as moderator. Panel members included Herbert K. Cook, director of engineering, Master Builders Research Laboratories, Cleveland; E. G. Swenson, Division of Building Research, National Research Council, Ottawa; Samuel D. Banks, Dewey and Almy Chemical Co., Cambridge, Mass.; H. John Racey, vice-president, Racey, MacCallum & Associates, Ltd., Montreal; and L. H. Tuthill, U. S. Bureau of Reclamation, Denver.

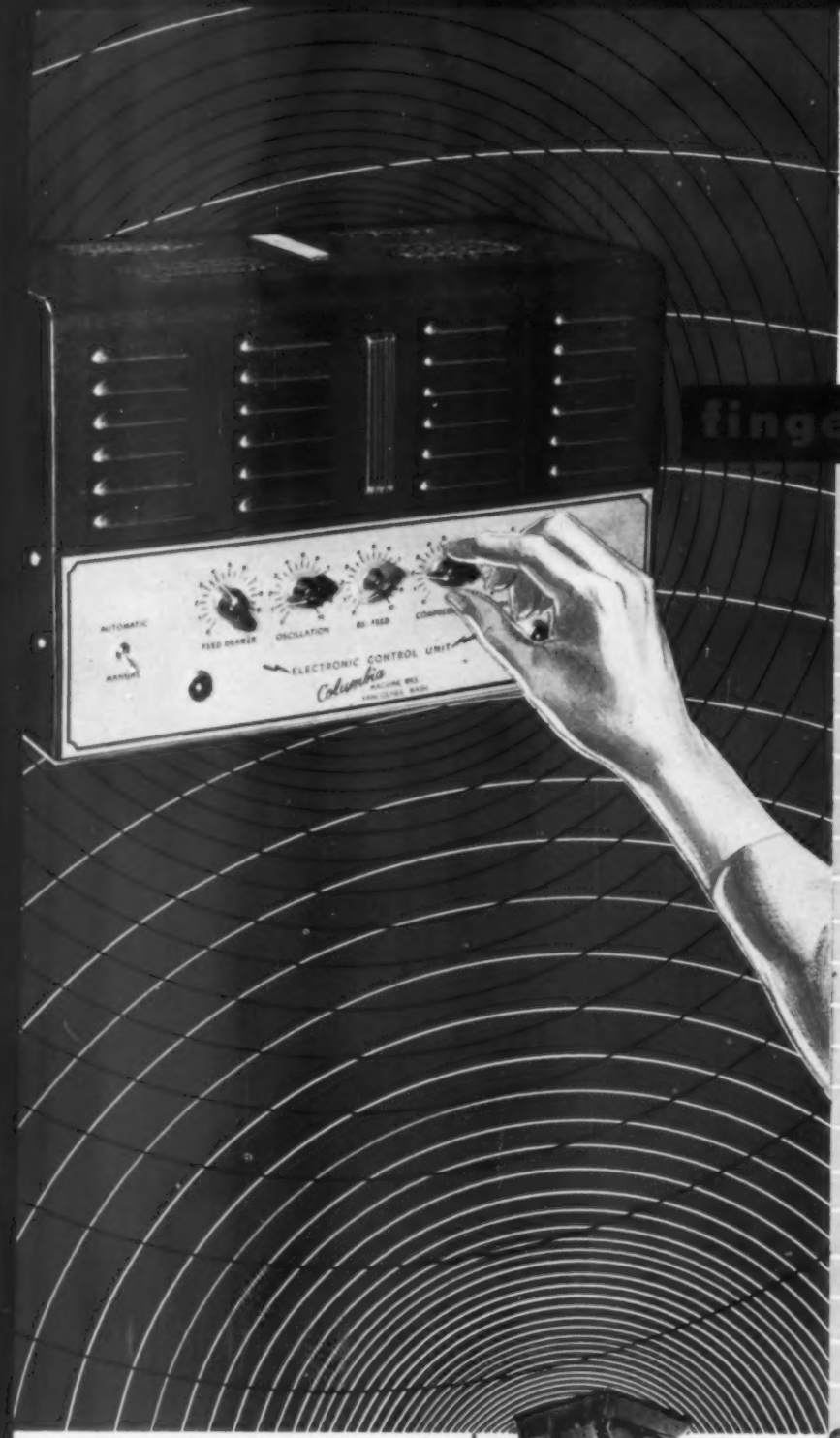
Mr. Cook reviewed the contents of the A.C.I. Standard *Recommended Practice for Winter Concreting*, A.C.I. 604-56. One of the important recommendations of that standard is that air entrainment and 1 percent calcium chloride will permit considerable reduction in the required length of protection—from which it obviously follows that the costs of protection are correspondingly reduced. He also emphasized the need for advance planning and keeping equipment and plant ready for quick use. It is too late to begin assembling protective devices and materials after concrete has been placed and the temperature begins to approach the freezing point.

Trends in winter concreting in Europe were reviewed by Mr. Swenson. With increased winter construction being encouraged in European countries, there is a growing tendency to choose those types of structures most amenable to winter protection. This trend is reflected in the wider use of prefabricated elements and in the Swedish techniques involving cellular concretes.

A large proportion of apartment buildings in Sweden are built with exterior walls of concrete having outside insulation of cellular concrete. Precast cellular concrete slabs are placed as outside insulation and bonded to the inner monolithic load-bearing concrete. During placing of the concrete, the cellular slabs serve as the outside formwork. Winter protection for such structures is relatively simple. Mr. Swenson stated that all types of precast concrete elements are used widely in winter work in Europe.

Mr. Burks discussed winter concreting methods for mass concrete. He elaborated on some of the principal features of the A.C.I. Winter Concreting Standard insofar as they apply to mass concrete. He also briefly discussed the influence of protection insofar as volume change and cracking from heat of hydration are concerned.

Mr. Racey illustrated what can and does happen to those who take



Columbia's
electronic control unit
gives you
finger-tip command
of your concrete block machine!

On Columbia machines, the electronic control makes the offbearer man complete master of his machine. And there's no need to stop the machine when modern Columbia electronics are on the job, for adjustments are made at any point in the cycle while the machine is in action. Nor does changing one portion of the cycle affect the rest of the cycle!

For instance, the feed drawer may be held over the feed box for a slight hesitation to about 10 seconds. Or, when aggregate is too wet or gummy, the feed drawer may be oscillated one or more times to break up the bridging of the material. For solid units requiring a large quantity of material, the feed drawer may be taken all the way back and brought out again with a new load—controlled completely by electronics.

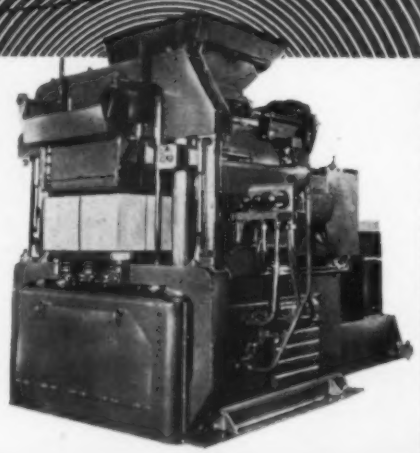
Manufactured from standard heavy-duty radio parts, the electronic control can be serviced by your local radio service man.

Columbia's Electronic Control Unit is just one of the many reasons why we maintain—

Columbia's Performance is Built-In!

Columbia 12 in. High . . . the machine that made the specialty market!

For modular blocks to specialty products, here's the machine that makes them all. Write for complete information today!



Columbia
MACHINE

Home office:
107 S. GRAND, VANCOUVER, WASH.
Phone: OXford 4-1501

Factory Branch and Warehouse:
MATTOON, ILLINOIS

Parts Depot and Offices:
BURBANK, CALIFORNIA

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, Texas, Massachusetts, Montreal, Quebec, Vancouver, B. C.

chances and do not follow recommended practices for winter concreting. This covered various failures and structural defects due to improper protection, curing, and construction techniques.

Inspection Trips The final two days, October 26 and 27, were devoted to inspection trips. On the morning of October 26 members visited the Montreal section of the St. Lawrence Seaway. During the afternoon various groups toured the plants of the Canada Cement Company, Ltd., Miron Frères, Ltée.; Mount Royal Paving & Supplies, Ltd.; and Siporex, Ltd.

Miron Frères, Ltée., has on the one site quarries and crushing plants, manufactured sand and expanded aggregate (perlite) plants, central mix and asphalt plants, and concrete block and pipe plants.

Mount Royal has at one location a crushing and screening plant, a pre-mixed concrete operation with a quality control laboratory, and two asphalt plants.

Siporex manufactures autoclaved cellular concrete. The material is manufactured in the form of precast reinforced lintels and unreinforced masonry units. The process involves portland cement, finely ground sand, and aluminum powder, together with certain chemicals to regulate the rise and set of the material.

October 27 was devoted to an inspection tour of the International Section of the St. Lawrence Seaway.

Session Chairmen The chairmen of the various technical sessions were as follows: Professor Jacques Hurtubise, Department of Civil Engineering, Ecole Polytechnique de Montreal; John F. Brett, consulting engineer, Montreal; Professor J. L. De Stein, Department of Civil Engineering, McGill University; and R. P. Fleming, architect.

Montreal Committee Gerald Milsom, president, Metallicrete Floor Co., Ltd., headed the regional committee on arrangements. D. F. Nash, sales manager, Dewey and Almy Chemical Co., was secretary; G. R. Rinfret, chief engineer and vice-president, Shawinigan Engineering Co., Ltd., was treasurer. In charge of the technical program was M. F. MacNaughton, vice-president, Mount Royal Paving & Supplies, Ltd.

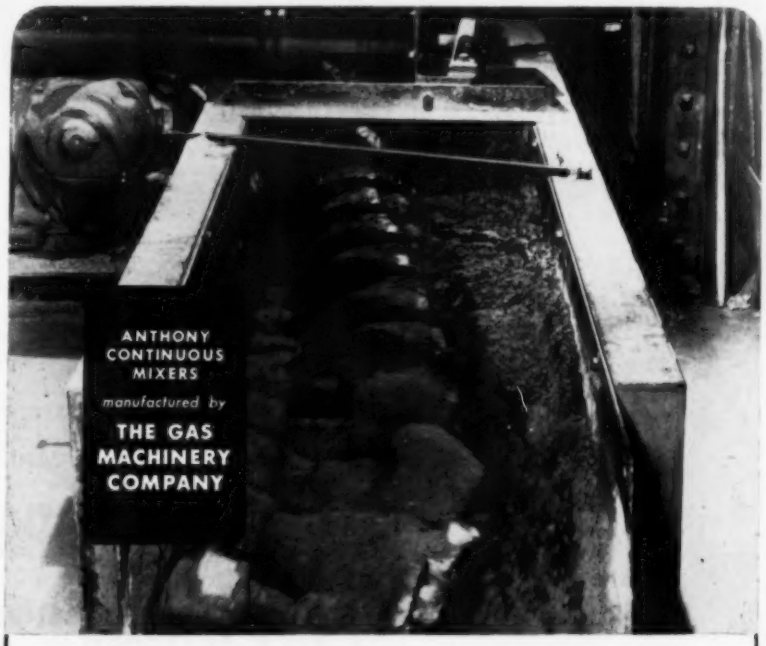
Concrete Ready-Made Steps, an affiliate of the D-H Precast Company, Pittsburgh, Pa., manufacturer of concrete steps, stepping stones, and patio stones, has opened a plant in Washington, D. C. The firm has headquarters in Capitol Heights, Md.

S.E.C.M.A.

(*From page* 360)

job classifications be kept in good order in anticipation of a visit from the N.L.R.B. representatives investigating a union complaint.

Program Committee The program committee included the following: Leon K. Camp, Camp-Blox, Inc., Columbus, Ga.; William R. Ireland, Atlanta Aggregate Co., Atlanta Ga.; Neilson Jones, Maule Industries, Inc., Miami, Fla.; George W. Katterjohn, Katterjohn Concrete Products, Paducah, Ky.; R. L. Kerr, Tidewater Concrete Block & Pipe Co., Charleston, S.C.; Hardy McGrath, Lehigh Portland Cement Co., Jacksonville, Fla.; H. A. McGee, Jr., Farmers Concrete Products, Inc., Orangeburg, S.C.; C. I. Needham, Aquatite Tile Co., Bradenton, Fla.; J. Roy Pennell, Sr., Spartanburg, S.C.; M. E. Rinker, Rinker Materials Corp., West Palm Beach, Fla.; Ben Wallis and Jerry Warren, Florida Div., General Portland Cement Co., Tampa, Fla.; and F. L. Williamson, Holloway Concrete Products, Inc., Winter Park, Fla.



Beats batch-mixing

Anthony Continuous Mixers speed production while cutting power and maintenance costs

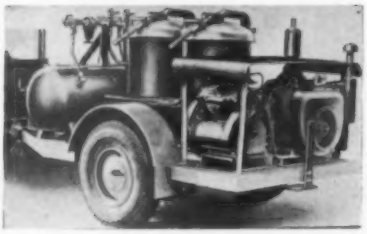
If you mix 5 tons or more per hour, Anthony Continuous Mixers can save you money. Continuous flow speeds production . . . and consequent lighter loads plus elimination of peak loads require only one-fifth the power and maintenance of batch-mixing. Gravity flow or force feed . . . standard sizes and special designs. THE GAS MACHINERY COMPANY, 16140 Waterloo Road, Cleveland 10, Ohio. In Canada: The Gas Machinery Co. (Canada) Ltd., Hamilton, Ontario.

Write for new informative 15-page, fully-illustrated booklet on continuous mixing.

THE **gas machinery** COMPANY

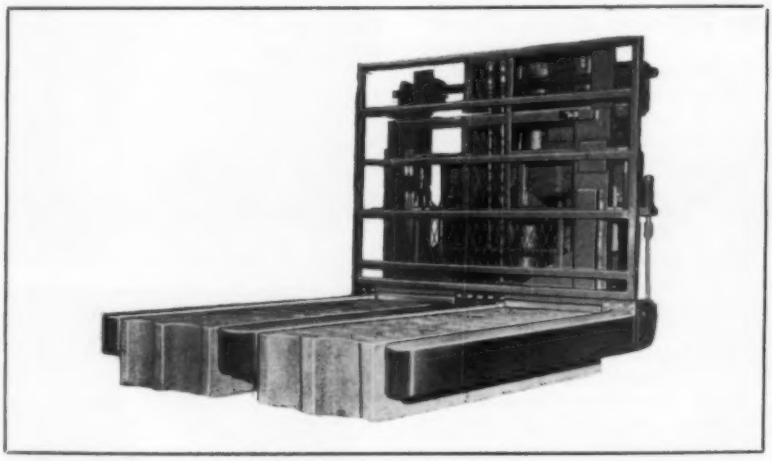
GAS PLANT EQUIPMENT
INDUSTRIAL FURNACE AND
CHEMICAL PROCESS APPARATUS

CM New Machinery and Supplies



• A new multiple-purpose compressed-air machine for masonry spraying has been designed by Colorcrete Industries, Inc. The material (Colorcrete, stucco, sand, or water) is mixed in dual tanks mounted on the machine and then forced directly through a hose to the discharge nozzle where it is mixed with compressed air from another hose. The material is thus reduced to a spray and evenly spread over masonry surfaces by compressed air. Pressure can be regulated to produce the desired degree of surface fineness. **(101)**

• Dumpcrete, a specially-designed truck body for hauling concrete without agitation from the ready-mix plant to the job site, has been redesigned for increased flexibility by the Manufacturing Division, Maxon Construction Company, Inc. The new "Double-Duty" body can be mounted on light, single-axle trucks to handle loads up to 4 cu. yd., or on tandem-axle trucks to handle loads up to 6 cu. yd. Original Dumpcrete features retained in the new design include a jackknife chute that swings in a 180 deg. angle for pinpoint placement; variable control of dumping angle with 90 deg. dump angle for clean discharge; controlled discharge of full load in 30 seconds or 30 minutes; and one-man operation. Simple removal of chute and gate assembly changes Dumpcrete into an all-purpose utility body. **(102)**



• Hydraulically controlled block lifts, manufactured by the Schmidgall Manufacturing Company, feature a new gripping action which is said to add 50 percent more gripping power. All models attach to forkbars on the lift truck by simple adaptors which are furnished. Schmidgall block lifts handle standard and modular 4 in., 8 in., and 12 in. blocks of Waylite, cinder, or concrete process. Standard size cubes can be handled depending upon the capacity of the fork lift truck. **(103)**

JANUARY, 1957

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110 111

112 113 114 115 116 117 118 119

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

HYSTER INDUSTRIAL TRUCKS ARE *BUILT* TO DO THE HEAVY WORK

XA-60 with side-shift apron and block forks. Four Hyster trucks are used for yarding and truck loading blocks and takes care of a plant production of 40,000 per day.

Pictured above is one of many typical examples of how Hyster® Industrial Trucks are helping to effect tremendous savings in the cost of handling Concrete Products.

Even if you are now using lift trucks or have never used industrial trucks of any kind, your Hyster dealer can show you how you can quickly realize more profit from your operation with these multi-purpose utility tools. Your Hyster dealer knows materials handling . . . he is an expert on the problems and their solution. He can help you with special techniques and cost reducing methods. Call him today...why not take advantage of his materials handling know-how?

HYSTER DEALERS GIVE YOU ALL 3!

1 **PLANNING**—your Hyster Dealer will plan your materials handling operation from scratch, or will analyze your present system to see if it can be improved.

2 **THE RIGHT TRUCK**—for *your* job from Hyster's complete line of industrial trucks (1,000-30,000 lbs.) and over 100 job-attachments for economical load handling.

3 **THE RIGHT SERVICE**—ample spare parts stock, shop facilities, factory-trained mechanics and an efficient field service that keep your Hyster lift trucks going on your job, wherever your job might be located. Hyster trucks are noted the world over for their low downtime.

Materials Handling Trucks from 1,000 to 30,000 pound capacities

2926 N. E. CLACKAMAS, PORTLAND 8, OREGON
1026 MYERS STREET.....DANVILLE, ILLINOIS
HYSTER N.V. .....NIJMEGEN, THE NETHERLANDS
FOUR FACTORIES: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands.

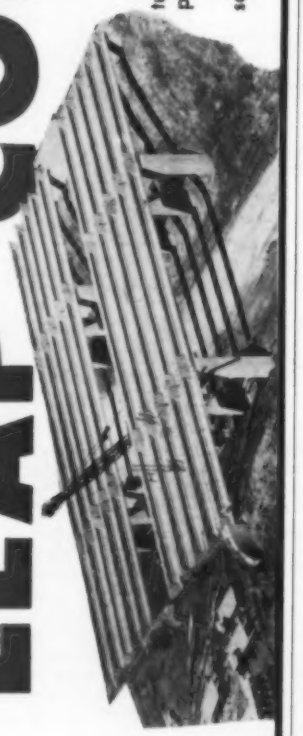
HYSTER COMPANY

LEAP CONCRETE

FRANCHISES MEAN GREATER PROFITS ON TURNPIKE JOBS!

Shown at Left: Bridge beams for Florida Turnpike manufactured by R. H. Wright & Son, a LEAP FRANCHISED prestressed products manufacturer.

You too can share in these profits - - Franchises available in some localities - write LEAP Concrete, Inc., Lakeland, Fla.



FREE! LEAP Concrete, Inc. P. O. Box 1053 Dept. A-13, Lakeland, Florida

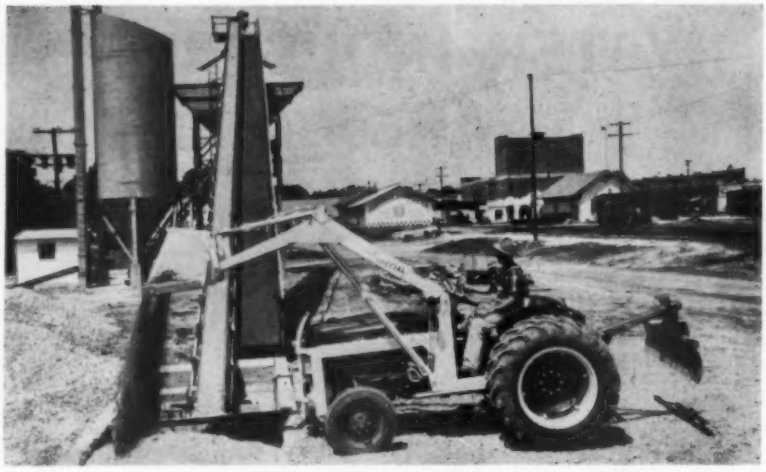
Send information about LEAP Prestressed Products; Franchise ☐, Double Tee ☐, Joists ☐, Beams ☐, Piling ☐

NAME _____

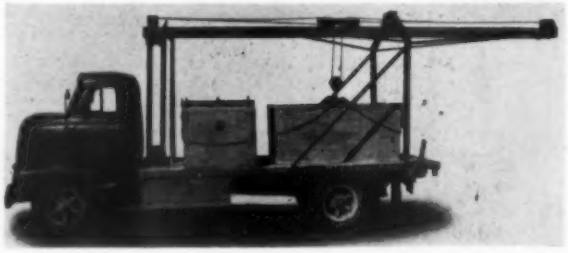
ADDRESS _____

CITY _____ STATE _____

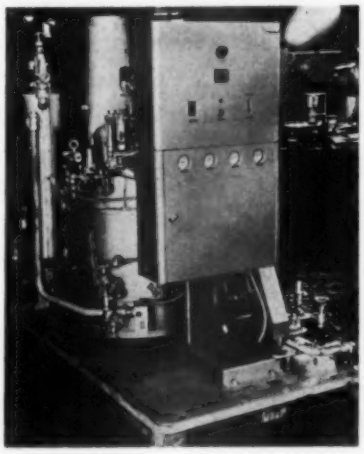
I am on: Architect ☐, Engineer ☐, Contractor ☐ We are interested in a LEAP FRANCHISE ☐



• This International 300 Utility tractor, equipped with a Shawnee front-end loader and an 11 cu. ft. material bucket and a McCormick backfill blade, is shown filling a bin at a ready-mix plant. The unit is also used to repile sand and gravel and for general cleanup work around the yards. Power steering, built in as an integral part of the steering mechanism, provides easy maneuverability. International 300's equipped with Torque Amplifier have ten speeds forward, two in each gear. Torque Amplifier enables the operator to change speed in each gear without stopping or shifting gears. When the operator pulls back on the TA lever, the travel speed is reduced one-third and pull power or push power is increased up to 45 percent. **(104)**



• The Norwalk Vault Company is now marketing a delivery rig for concrete vaults and septic tanks. This rig, of all steel construction, is designed for the efficient and rapid loading and unloading of materials. All operations are power controlled for greater safety. A double winch is used: one drum is for controlling trolley travel and the other for raising and lowering the head. The rig may be installed on any long wheel base truck, and may be operated from either side by one man. The unit may be installed at the Norwalk factory or the parts may be shipped and assembled by a mechanic and welder. **(105)**

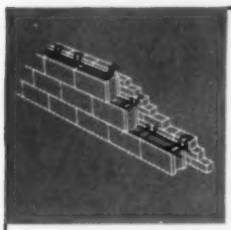


• Model 4615, a new Vapor Modulatic steam generator which produces from 400 to 1,750 lb. of steam per hour from 60 deg. feed water at 75 to 300 lb. steam pressure, has been developed by the Vapor Heating Corporation. The generator, suitable for concrete curing, is said to produce steam at about 80 percent efficiency at all levels of output. Each 4615 Vapor Modulatic steam generator is a complete package which includes a 3 hp. electric motor, a blower, a feed water pump, a steam separator, a fuel pump, and panel mounted controls all mounted on a steel base. **(106)**

NEW! MASONRY REINFORCING

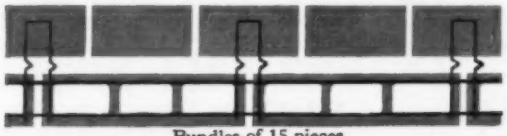
BY MANUFACTURERS OF BLOK-LOK

for increased block sales



NEW! . . . ECONO-LOK* CAVITY

This all flush welded masonry reinforcing relieves horizontal stresses in the back-up wall and ties it firmly to the exterior wall in one operation. Adds lateral strength! Minimizes mortar shrinkage and settlement cracks. Moisture drip U-BAR on 16″ centers eliminates moisture conduction. Available in 12′ lengths of all 3/16″ wire. (9 U-BARS per 12′ pc.)

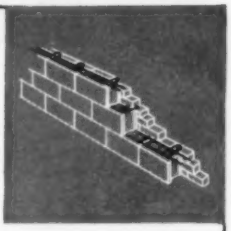


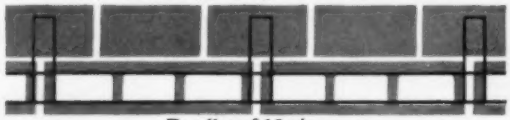
Bundles of 15 pieces.

NEW! . . . ECONO-LOK*

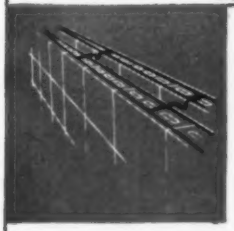
ELIMINATES TROUBLESOME HEADERS

Designed specifically for solid masonry . . . block back-up with brick face. ECONO-LOK'S two heavy lateral rods are the answer to controlling mortar shrinkage and settlement cracks and, at the same time, they tie-in the brick face with ECONO'S U-BAR on 16″ centers. Available in 12′ lengths of all 3/16″ or #9 wire. (9 U-BARS per 12′ pc.)



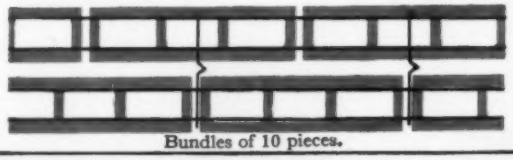


Bundles of 15 pieces.



CAVITY-LOK*

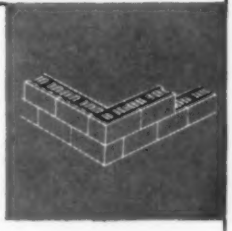
A combination of four lateral heavy steel rods, joined by flush welded cross bars with a positive action moisture drip. With CAVITY-LOK you get the strength of two reinforced masonry walls in one. Available in 10′ lengths with cavity ties on 16″ centers. All 3/16″ wire (8 ties per 10′ pc.) Get all the facts on CAVITY-LOK today!



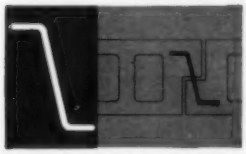
Bundles of 10 pieces.

BLOK-LOK

for solid masonry walls; for brick with block back-up; for block construction. BLOK-LOK flush welded joints give you thin, consistent masonry joints with the utmost structural strength. Block cavities are not obstructed. Shrinkage and settlement cracks are minimized. Available in 10′ or 12′ lengths in various widths, gauges and finishes.

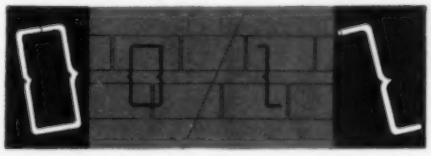


End-capped in bundles of 25 pieces.



CONTROL-TIE

Designed and manufactured specifically to provide positive tie in continuous vertical control joints.



Rectangular Cavity Tie and Z Bar for Cavity Walls

All 3/16″ wire, copper cased, galvanized or hot-dipped galvanized finish.

All products available in various finishes

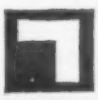
FAMOUS FLUSH WELD

Columbia University's comparison tests show BLOK-LOK's flush weld is up to 65 times stronger.

PARTITION-LOK*

Used at all intersections with interior bearing and non-bearing partitions.

CORNER-LOK (prefabricated)



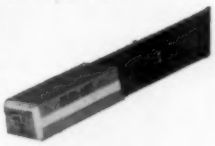
Corners are reinforced simply and economically with CORNER-LOK.

FREE . . . WRITE TODAY!

For . . . New BLOK-LOK & Concrete Block Wall Calculator. Use height and length of the wall and Calculator tells you number of concrete blocks required . . . as well as amount of BLOK-LOK.

PACKAGED FOR CONVENIENT HANDLING

Printed sizes on end of boot for easy identification. Booted ends eliminate "fanning out" and cuts in handling.



AA WIRE PRODUCTS CO.

7211 COTTAGE GROVE AVE., CHICAGO 19, ILL.

Phone: RAdcliffe 3-8313

NAME_____

ADDRESS_____

I am a ☐ BLOCK MFR. ☐ READY-MIX PRODUCER ☐ CONTRACTOR

☐ I am interested in becoming a BLOK-LOK distributor.

☐ Send me literature and prices.

☐ Send me (FREE) new block and BLOK-LOK calculator.

* Pat. Pending. Copyrighted 1957, AA Wire Products Co.

NEW GOVERNMENT RELEASE!
UNUSED
CAB-OVER-ENGINE
GMC 6x6 ARMY TRUCKS

- Unused and Guaranteed!
- Factory-New Performance!
- Two Cost Less Than One!
- Delivered on Approval!

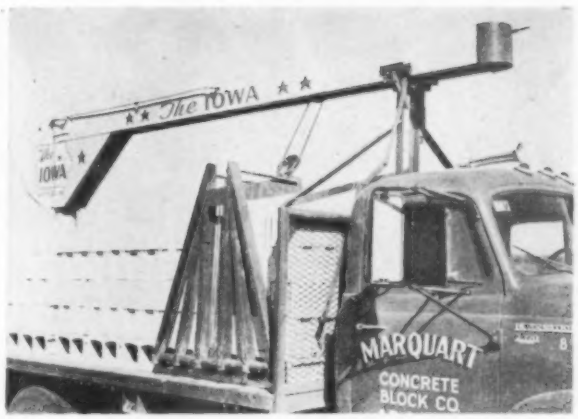
TWO of our Unused and Guaranteed 6x6 Cab-Over-Engine GMC's cost LESS than ONE new truck . . . give GUARANTEED NEW PERFORMANCE!

Special cab-over-engine design with extra frame length means increased load capacity, BIG SAVINGS TO YOU!

Tandem axle with front wheel drive available with 17' all-steel bed, wooden side boards. DELIVERED ON APPROVAL!

For specifications, prices, delivery. Write, wire or phone collect JAckson 5-7841
MILTON Y. TOOMBS, JR.,
Sales Manager

MEMPHIS EQUIPMENT Company
CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
706 S. THIRD ST. MEMPHIS 2, TENN.



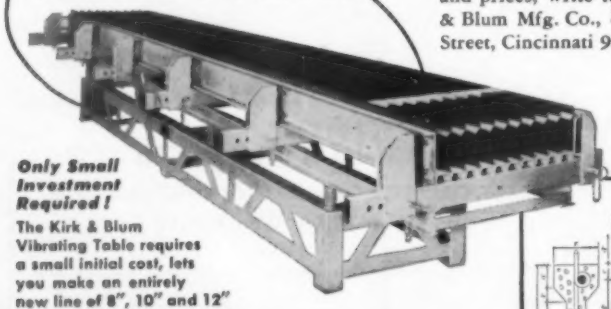
● The Iowa Star, manufactured by the Waterloo Unloader Corporation, will unload most loads, either at truck level or into an 11 ft. excavation, without moving. One unit can unload another truck that has no unloader. All movements of the swing boom, trolley, and fork are activated by smooth, positive hydraulic cylinders. Adjustments are provided on each movement individually. **(107)**

● The Stow Manufacturing Company has recently developed a new "Twin-Beam" vibrating screed for striking off and finishing precast concrete slabs. Vibration is transmitted evenly to the two beams so that as the screed is pushed along the first beam strikes off the concrete and the second beam gives it a final flush, striking off any remaining air bubbles. The result is a thoroughly vibrated, smooth slab. **(108)**

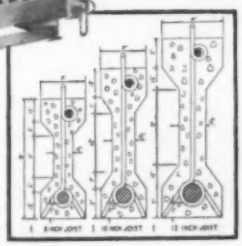
Add a New Profit-Maker
increase your volume

PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

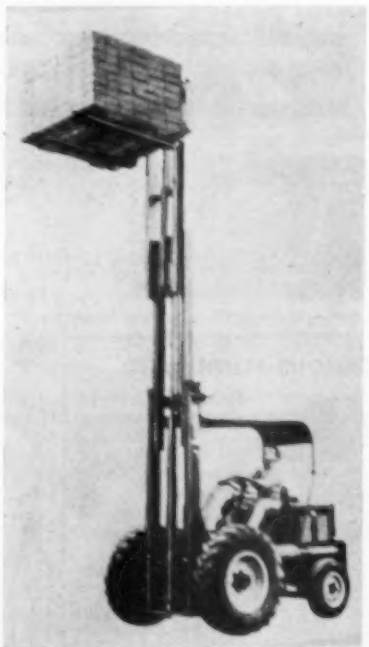
Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.



Only Small Investment Required!
The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.



KIRK & BLUM
Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

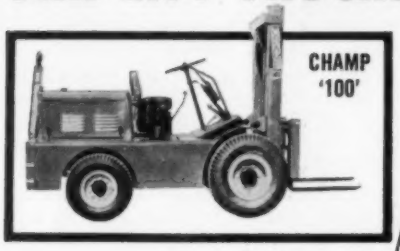


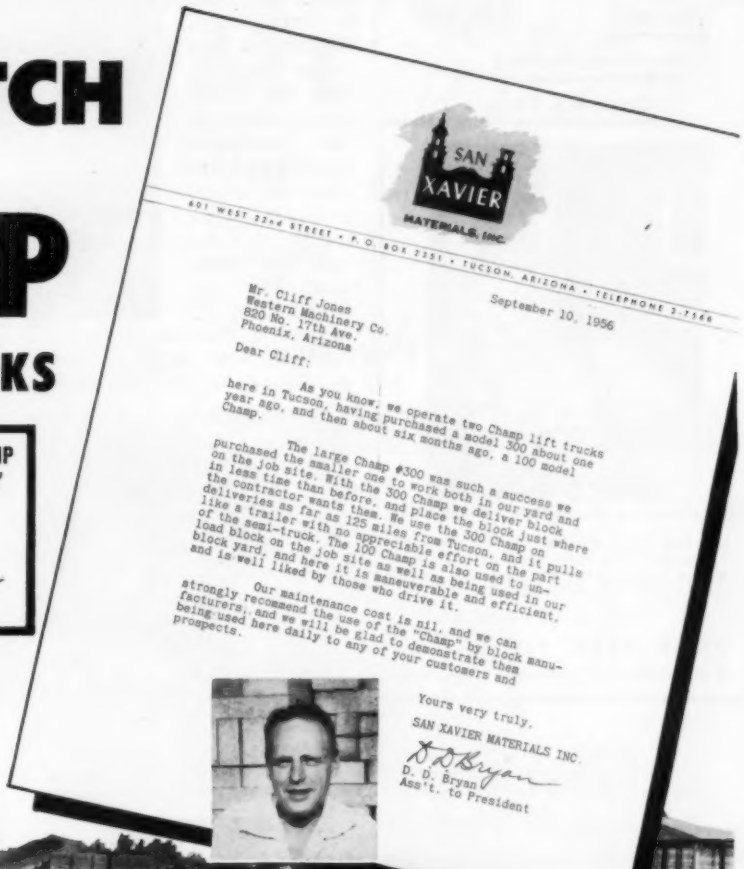
● A lifting height of 20 ft., allowing a cube of blocks to be placed high up on the scaffolds, is a feature of the Champ Corporation's 200 forklift truck. With the mast collapsed, it also operates as a regular truck, enabling it to run loaded through a 10-ft. high opening. **(109)**

SEE US at CONCRETE INDUSTRIES EXPOSITION, St. Louis
KIEL AUDITORIUM **BOOTH 39** **FEB. 25-26-27-28**

the BIG SWITCH *is to* CHAMP

FORK LIFT TRUCKS





SAN XAVIER MATERIALS, INC.

601 WEST 22nd STREET • P. O. BOX 2251 • TUCSON, ARIZONA • TELEPHONE 2-7546

September 10, 1956

Mr. Cliff Jones
Western Machinery Co.
820 No. 17th Ave.
Phoenix, Arizona

Dear Cliff:

As you know, we operate two Champ lift trucks here in Tucson, having purchased a model 300 about one year ago, and then about six months ago, a 100 model Champ.

The large Champ #300 was such a success we purchased the smaller one to work both in our yard and on the job site. With the 300 Champ we deliver block in less time than before, and place the block just where the contractor wants them. We use the 300 Champ on deliveries as far as 125 miles from Tucson, and it pulls like a trailer with no appreciable effort on the part of the semi-truck. The 100 Champ is also used in our load block on the job site as well as being used in our block yard, and here it is maneuverable and efficient, and is well liked by those who drive it.

Our maintenance cost is nil, and we can strongly recommend the use of the "Champ" by block manufacturers, and we will be glad to demonstrate them being used here daily to any of your customers and prospects.

Yours very truly,
SAN XAVIER MATERIALS INC.
D. D. Bryan
D. D. Bryan
Ass't. to President

CHAMP '100' SILVER STREAK

Champ performance enthusiasm is running high! For instance, the Champ '100'...it's powerful and economical to own and operate, provides greatest versatility, is highly maneuverable, tows perfectly without trailer, provides better operating visibility, 4,000 lb. capacity at 24" load center, Chrysler industrial engine, available with fluid drive. Setting new daily material handling records — saves you more money! A great all-around plant lift truck. Own this Champ for as little as $4 per day on easy payment plan! Write or wire for brochure, TODAY!

Read the Champ performance report from Mr. D. D. Bryan, ass't. to president, San Xavier Materials, Inc., Tucson, Arizona. This plant operates 5 Besser block machines on extended shift basis, owns and operates their own rock and sand quarry and ready-mix plant. Plant occupies 11 acres, services approx. 125 mi. radius. In business 15 yrs. This firm has just delivered lightweight blocks for 985 home housing project in San Manuel, Arizona.

Pioneers of Lift Trucks for the Masonry Industry! Builders of Champ 100, 200, 200HL, 300 and 600.

CHAMP CORPORATION

2500 N. Rosemead Blvd.
El Monte, California
DEALER INQUIRIES INVITED!

KOGL'S

Patented

UNIT STEP

One-piece

Non-skid

Precision-Perfect

Concrete Step

CONVENIENT • PERMANENT • ATTRACTIVE

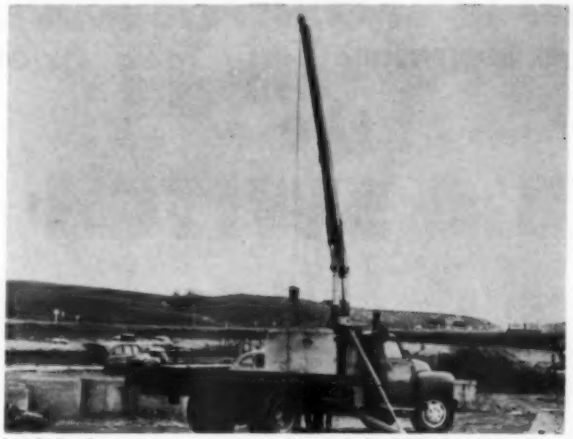
Unit Step Forms made in standard widths of 4, 5 an 6 feet. 1 to 6 risers high, one piece, with or without platforms. Steps and railings available in unlimited variations.

Write for full details

UNIT STEP FORM CO.

S. Robert Road, R. 10, South St. Paul, Minn.

• Model 400 Versa-Lift, a new truck-mounted crane made by Teale & Company, mounts on any truck from 1½ tons up. Completely hydraulic, the Versa-Lift converts the truck into a self-unloader which requires only one man for operation. The unit lifts from 3,500 lb. with a standard 16 ft. boom to 7,000 lb. with an 8 ft. boom, and swings in a full 360 deg. circle. **(110)**



• A new steam-operated vibrator, Model SDV-35, has been added to the line of noiseless Vibrolators manufactured by the Martin Engineering Company. The Model SDV-35 is suitable for application where wet or dry materials must be moved by induced vibration. The new Vibrolator may be adapted for steam or air, and operates in any position. All models have only one moving part—a steel ball—and are reported to require no maintenance or lubrication. **(111)**

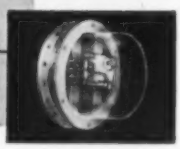
BULK MATERIAL CONTROL
under
Pressure or Vacuum

New Roto-Bin-Dicator mounts outside bin, at any angle, for bin level signaling or machinery control. Material loads on paddle actuate Micro switch in motor housing. Flexible paddle shaft permits use with large or lumpy materials. **Explosion-Proof U. L. Listed Units Now Available.**

ROTO-BIN-DICATOR

BIN-DICATOR

BIN-FLO AERATOR



Low pressure air diffuser assures steady flow of fine, dry materials that tend to pack in storage.

The original diaphragm-type bin level indicator for all ordinary applications.

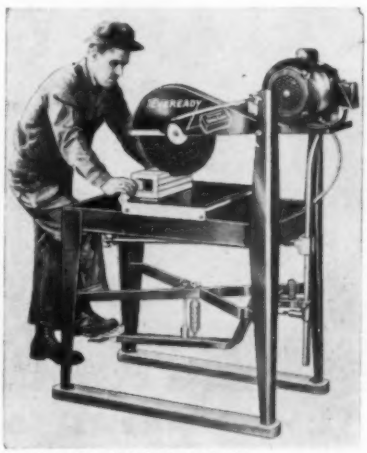
Complete Illustrated Literature FREE

THE BIN-DICATOR CO.

13946-W Kercheval • Detroit 15, Mich.

Phone: VAlley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT



• Model DW-2 BrikSaw, a new heavy-duty masonry saw developed by the Eveready BrikSaw Company, is powered by a 2 hp. totally enclosed, fan cooled, continuous duty motor. The DW-2 is said to offer one-third more power, which results in faster, smoother cutting and adds to the life of the masonry blades. "Toe-Matic" control allows the operator to adjust the angle of the cutting head by merely tilting the foot pedal upward. Both hands are free to position the head properly. **(112)**

Best Resolution for Block Makers

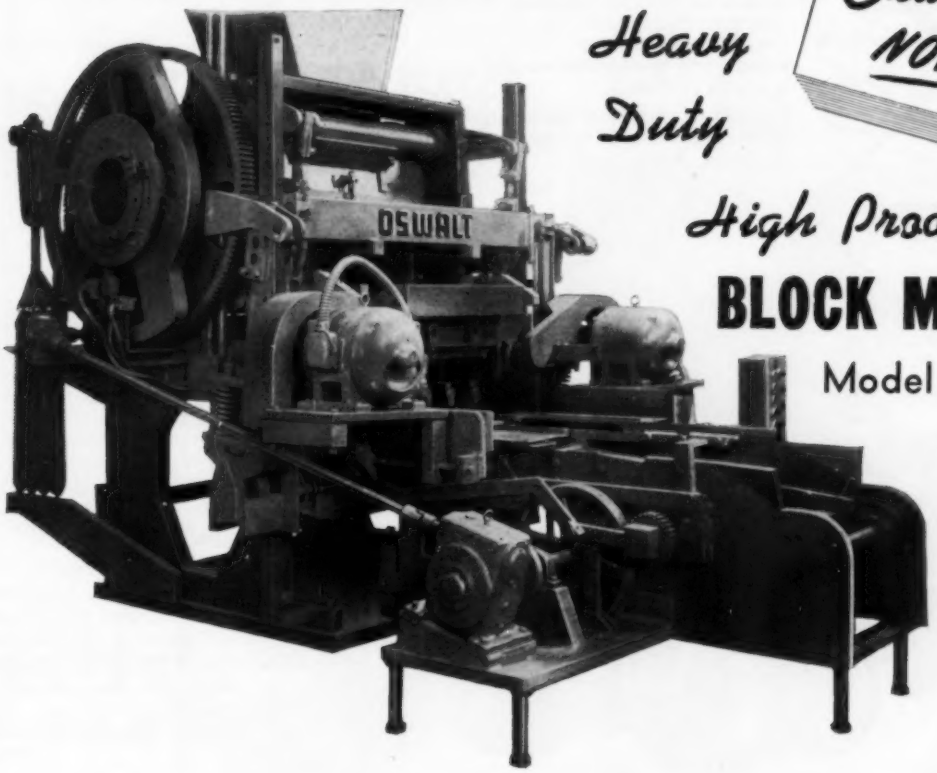
The Modern OSWALT

Heavy Duty

High Production

BLOCK MACHINE*

Model "H" No. 55



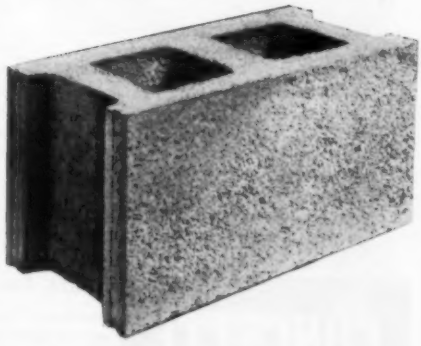
*U. S. PAT. No. 2,770,346

Write for Brochure of OSWALT Block Machine with new features shown

For maximum production of Superior Quality Blocks

These Oswalt-engineered features assure increased plant efficiency, lower operating costs and new records of production without sacrifice of quality.

- ***Improved Vibration and Production Speed-up***
- ***Shock-free Ejector and Front-end Pallet Feeder***
- ***New Simplified Height and Density Control***
- ***Extra heavy construction with full 2" thick stress relieved frame***
- ***Smooth relaxed operation, powerful action and long economical service***



Consistent for: SIZE, SHAPE, DENSITY, UNIFORMITY, STRENGTH

GOING SOUTH FOR THE WINTER?

See the OSWALT Block Machine operating at these plants:

Franklin Concrete, Inc.
Franklin, Tenn. Route 31 (Nashville area)

C & S Concrete Products Co.
Dalton, Ga. Route 41

Miami Cement Block Industries
Miami, Fla.

Broward Septic Tank & Block Co.
Fort Lauderdale, Fla. Route No. 1

OSWALT ENGINEERING SERVICE CORP.

1335 Circle Ave., Forest Park, Ill. **Phones: EStebrook 8-4664 (Chicago) FOrest 6-2798 (Suburban)**

25th Anniversary

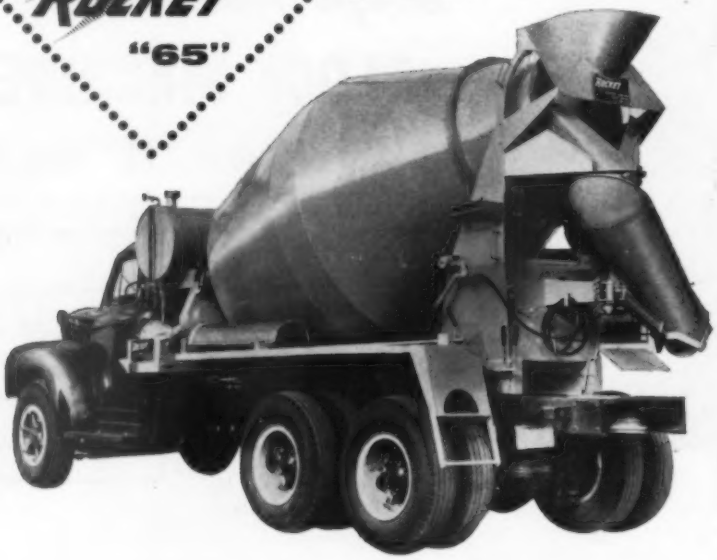
Combination WORKhorse and RACEhorse! that's

The new ROCKET "65"

Seldom do you find a piece of machinery that combines the strength, durability and dependability of a WORKhorse with the speed and mobility of a RACEhorse. But that's what ready-mix operators are saying about the new Rocket "65"—a versatile 6½ to 7 yard mixer. The Rocket is designed and engineered to operate for years at maximum efficiency, with surprisingly little maintenance. Every conceivable ease-of-operation feature, *plus* tremendous strength, has been *built in*.

After you've bought a Rocket, you'll agree that it is both the workhorse *and* racehorse of your fleet!

Also available in 3, 3½, 4, 4½, 5, 5½, 6 and 6½ yd. models.



ALL THESE FEATURES *at* NO EXTRA COST!

HYDRAULIC CHUTE CONTROL Is fully automatic. Controls grouped for easy access.

ALUMINUM EXTENSION CHUTE attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

ELECTRIC REVOLUTION COUNTER kit included; you can handle most specifications with the Rocket!

SPECIAL ALLOY, abrasion resisting steel used at all wear points.

UNOBSTRUCTED HOPPER, for rapid charging, no spilling or waste.

POSITIVE CHAIN DRIVE, flexible power, not affected by truck twist, road shock.

STANDARD INDUSTRIAL ENGINE, truck-type transmission. Repair parts readily available.

THREE-POINT SUSPENSION, one-piece cast steel precision machined ring.

DEMAND THE BADGE OF DEPENDABILITY

CONCRETE TRANSPORT MIXER CO.

MAIL THIS COUPON TODAY!

Gentlemen: Please rush full information, prices and terms on the following:

☐ New Rocket Revolving Drum Truck Mixer CM
☐ Hi-Lo Stationary Drum Mixer
☐ Batching Equipment ☐ Water Meters
☐ Material Handling Equipment

Name_____

Firm_____

Address_____

City_____ State_____

4989 FYLER AVE., ST. LOUIS 9, MO. FLanders 2-7800

New Literature

Concrete double T roof and floor slabs are described in an 8-page brochure released by *Leap Concrete, Inc.* Advantages of prestressed concrete structural products, the method of making and installing them, and tables of loading for roof and floor members are available. **(113)**

●

The Askania Electrojet, an electro-hydraulic unit which creates powerful hydraulic output thrust or torque from low level electrical input signals from various sensing elements, is featured in Bulletin 38.1, published by the *Askania Regulator Company.* **(114)**

●

The Yale & Towne Manufacturing Company has published a new brochure covering in detail the various models in its "Integrated Design" line of gasoline and LP-Gas powered industrial lift trucks. The booklet includes key features and specifications on trucks from 2,000 to 10,000 lb. in capacity. **(115)**

●

Flexible metal hose products for post-tensioning concrete members are featured in Technical Data Book U-444, a publication of the *Universal Metal Hose Company.* Application and construction data, specifications, and couplings to be used for the different types of metal hose are included. **(116)**

●

Terratrac Model M-3 fork lift, made by the *American Tractor Corporation,* has a 21 ft. lift and maximum capacity of 3,500 lb. It is convertible to a loader, dozer, etc. A folder offered by the manufacturer contains features, specifications, and application photos. **(117)**

●

Model AR-4, the new Ramex air hammer, manufactured by *E. V. Nielsen, Inc.,* has one moving part in addition to the simple impact control trigger button which regulates the force of the blow. Useful around ready-mixed concrete plants, the air hammer can utilize more than 40 specially designed tools and accessories. **(118)**

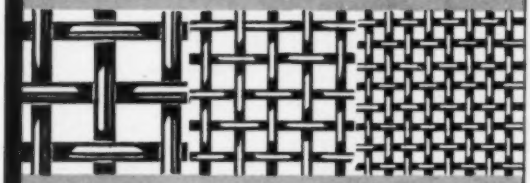
●

"How to Operate a Lift Truck," an informative booklet prepared by the *Hyster Company* for use as part of an operator training progam, discusses peventive maintenance, safety, and basic materials handling. **(119)**

STRONG AS ARMOR

NAT-ALOY

Woven Wire Screens



Reliable Nat-Aloy woven wire cloth is specified throughout industry for maximum screening accuracy and economy. Available in flat surface, lock crimp, double crimp, rectangular and long slot openings. All sizes, meshes and gauges—prompt shipment.

WE OFFER NOW...SUPER NAT-ALOY OIL TEMPERED WOVEN WIRE CLOTH

★ GREATER RESISTANCE TO ABRASION
★ MORE TONNAGE AT LOWER COST
★ FEWER COSTLY CHANGE OVERS

Write for information. Also stainless steel wire screens.

NATIONAL WIRE CLOTH COMPANY
252 W. Fairfield Ave., St. Paul 1, Minnesota

MORE WEAR PER PAIR

SURETY

TRIPL-PALM COATED FABRIC GLOVES

2 way savings

TOUGHEST WHERE WEAR IS ROUGHEST
Tripl-Palm design eliminates the usual "failure points"—provides extra heavy palm coating for extra wear and comfort.

NO SEAM HERE
Nothing to rip out — wing thumb construction assures multiplied service life.

IDEAL FOR CONCRETE BLOCK HANDLING
Tests prove Tripl-Palm gives long service. Send for bulletin.

THE SURETY RUBBER CO.
CARROLLTON, OHIO

In Canada: Safety Supply Co., Toronto

GENUINE

DUR-O-WAL®

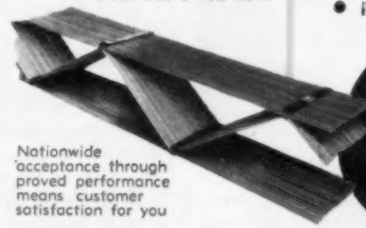
is a

Sales Builder

6 REASONS *why Dealers Stock Dur-O-wal*

Dur-O-wal:
- is called for by name
- specified by Architects
- is an engineered product
- has fast turnover
- is easy to handle

• Architects specify Dur-O-wal. Builders demand Dur-O-wal. Dealer SALES on Dur-O-wal reach new highs with every season. CUSTOMER SATISFACTION couldn't be better! Yes, proved performance and economy in masonry walls the country over are the reasons why Dur-O-wal is a fast turn-over, big sales volume item for you. Stock Dur-O-wal now!



Nationwide acceptance through proved performance means customer satisfaction for you

EASY TO STOCK, STORE TO USE AND TO SELL

Trussed Design
Butt Weld • Deformed Rods

DUR-O-WAL®

SEE US AT THE
CONCRETE INDUSTRIES EXPOSITION
KIEL AUDITORIUM—ST. LOUIS
FEB. 25 THROUGH 28, 1957

Dur-O-wal Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-wal Prod., Inc., Box 628, **SYRACUSE, N.Y.** Dur-O-wal of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-wal Prod. of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-wal Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-wal Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-wal, Inc., 165 Utah St., **TOLEDO, OHIO**

News of Manufacturers

The appointment of R. O. Boden as general manager of the parent Heltzel Steel Form and Iron Company, Warren, Ohio, was announced recently by Carl J. Heltzel, president.

Mr. Boden, although only 40 years of age, comes to Heltzel with an excellent background in corporate management. He has been employed by Edwards and Barnes, Pittsburgh business consulting firm; B. G. O. Consulting firm of Pittsburgh, specializing in steel fabrication; Chase Brass and Copper Co., Inc., and the Pittsburgh Rubber Company.

As general manager of the Heltzel organization, he will conduct the affairs of The Flexible Road Joint Machine Company, Warren, Ohio, and The Ohio Structural Steel Company of Newton Falls, Ohio, as well as those of Heltzel.

R. O. Boden

M. Kahn

Leap Concrete, Inc., Lakeland, Fla., designing firm of prestressing facilities and products, announces a new free industrial advertising service for its franchised and approved prestressed concrete manufacturing yards with the appointment of Milton Kahn, well known Florida advertising man, as advertising manager.

Under the new program, Leap Concrete will provide complete merchandising to its franchised yards in planning and executing their advertising and promotional campaigns. The department will assist the yards in preparing newspaper, magazine and radio copy, as well as promotional pieces, such as brochures, direct mail inserts and similar items. A large stock of mats and electro plates are available for use by the yards in their advertising program.

Mr. Kahn, formerly of Philadelphia, served as a photographer with the press syndicates at New York City before coming to Florida, where for nine years he was advertising manager for Food Machinery & Chemical Corp. He comes to Leap Concrete, Inc., after serving as advertising manager for a large canner with nation-wide distribution.

Miami Fork-Lift Truck, Inc., has been named a dealer for the Baker-Raulang Company, Cleveland manufacturer of materials-handling trucks.

The Dallas, Texas, branch office of the Baker-Raulang Company has been moved to a new building at 1703 Levee Street, Dallas. The new location provides complete facilities for stocking of parts, and servicing and demonstration of Baker's complete line of gas and electric fork trucks, crane trucks, platform trucks and the unique Traveloader side-loading fork truck.

Baker-Raulang has also announced the appointment of M. S. Stevenson, formerly a district sales manager, as manager of the Dallas branch.

M. S. Stevenson

R. L. Borchardt

Three marketing promotions in the Communications and Electronics Division of Motorola, Inc., Chicago, Ill., were announced recently by Harold A. Jones, director of sales of the C & E Division.

Robert L. Borchardt has been named manager of the Technical Information Center succeeding Mr. Jones, who was promoted to his present position earlier this year.

Mr. Borchardt joined the electronics company in 1950 after receiving his electrical engineering degree from the University of Minnesota and completion of his military service. He has functioned as assistant manager of the department since 1954.

Frederick W. Alexander has been promoted from technical editor to advertising manager. He replaces Reginald Mars, who resigned from the company to enter private business. Before coming with the company this year, Mr. Alexander spent 10 years with the Automatic Electric Company in Chicago, where he was the assistant advertising manager.

Robert E. Newlin has been named to the newly created post of product promotion supervisor. In his new position he will be responsible for coordinating the sales promotional activities of the communications product line. He joined the company in 1950 and has been a technical editor and staff writer.

To accommodate the increased services now being handled on a divisional level, Motorola's Division 3 headquarters has been moved from Fort Lee to Ridgefield, N. J.

John E. Heald, who has represented the Construction Division, John A. Roebling's Sons Corp., Trenton, N. J., in the South-East area for the past two years, has been assigned to the Mid-West territory. The Construction Materials Division of the Roebling firm, which is headed by Forest D. Burtch, specializes in wire, strand and fittings for prestressed concrete.

Mr. Heald, who is a graduate of Bradford Technical College, Leeds University, Leeds, England, is widely experienced in all phases of tensioning elements for prestressed concrete. His new headquarters are at Roebling's Chicago office, 5525 West Roosevelt Road. John H. Bass, Jr., will replace Mr. Heald.

J. E. Heald

H. Richmond

Hugh Richmond, Hyster Company, Portland, Ore., has been elevated to the position of supervisor, sales engineering, Eastern Sales Division, according to Harold Lucas, manager, Merchandise Division. Associated with Hyster since 1951, Mr. Richmond has held positions in the lift truck design engineering department at Hyster's Portland factory and more recently as a sales engineer at the Danville plant.

In a second Hyster sales engineering promotion, Tom Davis has been named a sales engineer in the Eastern Industrial Truck Division. He joined Hyster in 1950. He has been associated with Hyster's parts department at the Peoria, Illinois, factory and has also obtained retail sales experience at Hyster Company, Chicago.

Lay Brick and Concrete Blocks at 20° above zero

Forrer's Accelerator

for Concrete and Mortar

Now, with Forrer's new Accelerator, for Mortar and Concrete, you can lay blocks safely down to 20°F. For, this newly improved Accelerator actually lowers the freezing point of the water in the mix and speeds up setting time. Forrer's Accelerator increases strength and workability; brick mortar becomes easier to work; concrete easier to pour. Result: extra jobs and no delays in below freezing weather.

Solves Freezing Weather Worries

Solution is available in handy 1, 5, 30 and 55 gallon drums. Rust inhibitor added prevents it from affecting reinforcing steel or tools.

Forrer's
PRODUCTS FOR MASONRY
SINCE 1926

DEALER'S WANTED!

Attention Concrete Block manufacturers— For extra sales — sell Forrer's Accelerator. Stock up now for cold weather.

— Attractive Territories available for Distributors —

FORRER'S — Division of SPRAY-O-BOND CO.
2225 N. Humboldt Ave., Milwaukee 12, Wis.

Speed Up Hand Work with the BIG BULLY AIR HAMMER

- Clean Equipment
- Shape Dry Concrete
- Clean Forms

Clean Mixing Trucks Faster
Clean Fragile Mixing Equipment Safely
Vibrating Concrete From Hopper

Weight only 50 oz., 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

NEW! IMPROVED DESIGN INCREASES POWER 20-25%
Write Dept. C-1

See us at the N.C.M.A. show Booth 129

SUPERIOR PNEUMATIC & MANUFACTURING, INC
4758 Warner Rd., Cleveland 25, Ohio

Tufhorse KANT-RIP HAND PADS MITTENS GLOVES

PROTECT WORKERS' HANDS!

HEAVY SPLIT-COWHIDE HAND PAD NO. 308, TIE BACK. $7.80 PER DOZEN PAIRS.

Avoid costly injuries to the hands of your workers by giving them the protection they need—Tufhorse gloves, hand pads or mittens. Made of the finest cowhide, they are flexible and comfortable to wear.

ORDER SAMPLE PAIRS AT "PER-DOZEN" PRICES

Please send me samples of
☐ Glove No. G-9 ($16.50 per dozen pairs)
☐ Mitten No. 300 ($12.60 per dozen pairs)
☐ Hand Pad No. 308 ($7.80 per dozen pairs)
(All F.O.B. Des Moines)

Name_____
Firm_____
Address_____
City_____ State_____

DES MOINES GLOVE & MFG. CO.
DES MOINES, IOWA

Prestressed Concrete

(*From page* 349)

mind in any compilation which might be made of significant contributors. All of these—and their many compatriots—have made available for general use the results of their intricate study and research. In fact, this unstinted dissemination of information is common to all who have to date actively engaged in the betterment of the industry.

The development of high-strength concrete has necessarily kept pace with the evolution of the stressing elements. To compile any list of those who have noteworthily contributed outstanding data on this phase of the subject would require more adequate space than is here available, and would of necessity go back to the early efforts of and basic data developed by such pioneers as Duff Abrams, who in his time confidently predicted what has come to pass in the current liaison of concrete and steel. The use of 5,000-p.s.i. concrete with 275,000 p.s.i. strand is commonplace today.

The last year has seen perhaps the most rapid progress in prestressed concrete, not only in the stabilization of the basic principles of design and the fundamentals of both materials constituting the end product, but in the development of new materials and techniques influencing future designs. While linear prestressing—the technique applied to the formation of beams and slabs—first occupied the minds of European designers and fabricators, the progress in circular prestressing—as especially applied to storage tanks by the Preload Company—was the starting point of practical application of the principles in this country. Over the last five years, however, linear prestressing has far outdistanced the original domestic application.

With the start in 1950, of two bridges, one the Walnut Lane crossing in Philadelphia, and the other the Turkey Creek bridge in Madison County, Tenn., a survey of the Portland Cement Association a year later showed at least 100 such structures, the majority of which were either bridges or buildings. Since then it has been well nigh impossible to keep track of the installations with any completeness. A recent list compiled by this publication, of firms which had entered the prestressing field as producers, totalled over 225 such manufacturers, and this list today is not all-inclusive.

Realizing the necessity of keeping abreast of the widespread construction, various specification-forming agencies, such as the American Concrete Institute, American Society for Testing Materials, Highway Research Board, etc., rather belatedly took on the task of assembling criteria which would cover the latest techniques. One of the most progressive actions of this type was turned out by the A.C.I.-A.S.C.E. Joint Committee 323 on Specifications for Prestressed Concrete, the final form of which will be printed for distribution early this year. This is the culmination of three years' effort to get a comprehensive specification which would not hamper future developments as these occurred.

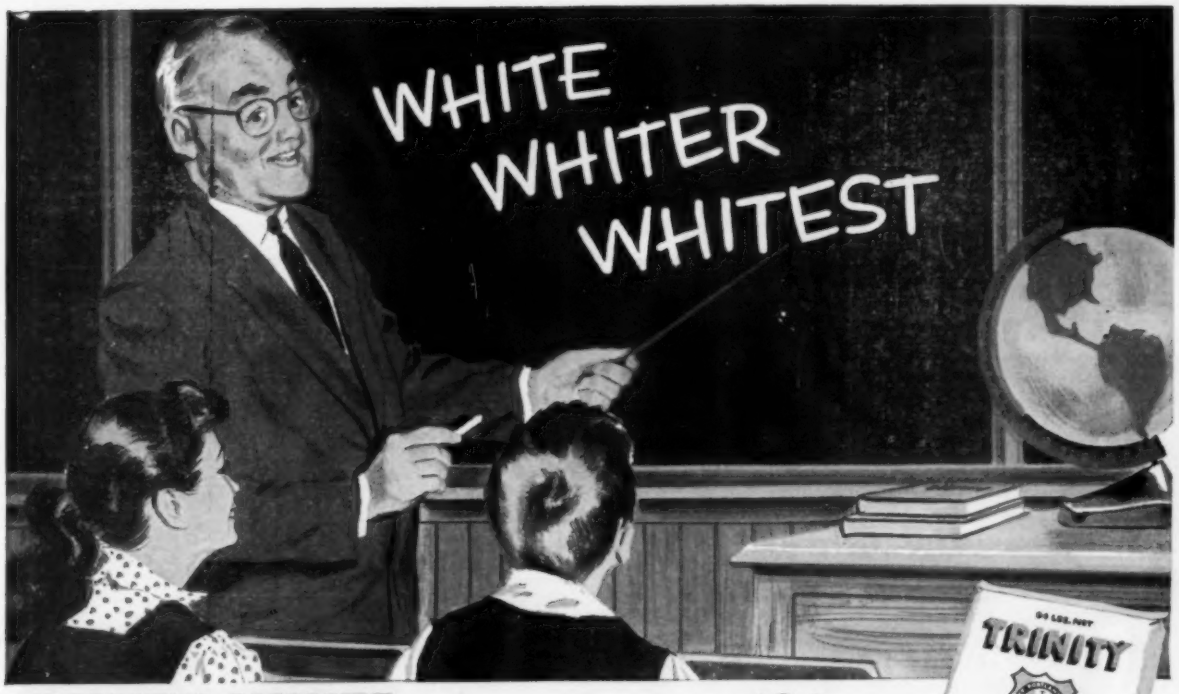
One of the best definitions of prestressed concrete was presented by the A.C.I. Committee on Prestressed Concrete, which described it in the following terms: "Concrete in which there have been introduced internal stresses of such magnitude and distribution that the stresses resulting from given external loadings are counteracted to a desired degree. In reinforced concrete members the prestress is commonly introduced by tensioning the steel reinforcement." So long as there is no cracking of the concrete, the stresses, strains and deflections due to these two systems of forces can be considered separately and superimposed if necessary. The above represents the most common point of view of most engineers designing prestressed concrete.

While all forms of structural members have been prestressed successfully, bridges have formed the backbone of the composite list. Some of the most important reasons for using prestressed concrete in such structures are facility of erection, reduced depth of members, allowing maximum clearance, comparative ease of moving completed members to remote locations rather than moving materials to such sites, mass production of large members of similar types and cross-sections, and strengthening of existing bridge girders which had been loaded over the original design loads.

In Florida, prestressed concrete bridge spans have practically dominated that field. There, a low terrain with flat slopes and broad flood plains crossed by numerous waterways predominates, making the long bridge, built of identical short-span, simply supported trestle units especially applicable. The relatively high cost of structural steel and the plentiful supply of satisfactory aggregates and portland cement were secondary considerations which helped make Florida the greatest user of prestressed concrete. California has lately come into second place in use of prestressed concrete, and other areas are fast developing uses in more highly competitive markets, solely on the basis of competitive cost in place. Just recently, a newly formed department of a large building supply and ready-mix producer in Chicago was awarded the first batch of 49 crossover bridges on the new Illinois toll road system (which will include some 250 such bridges) on the basis of low bid, under that of structural steel and standard reinforced concrete construction, the other alternates permitted in the bidding.

The Prestressed Concrete Institute, only now in its third year of existence, is a nation-wide, non-profit organization of manufacturers of prestressed concrete, and of persons and companies in allied or related industries, for the mutual exchange of information and ideas. Following the first two of its annual meetings, the third meeting will be held in conjunction with the World Conference on Prestressed Concrete, to be presented by the University of California, at the Fairmont Hotel, San Francisco, Calif., on July 29-August 2, 1957. This conference will undoubtedly bring together scientists, engineers, and manufacturers in the field of prestressed concrete, in order that their knowledge and experience may be pooled for the advancement of the industry. That such a conference could be held within a span of five years from the date of the first installation in the country speaks volumes for the initiative of the entrepreneurs who launched the first applications within this period.

Featured among the many subjects and papers which will be discussed at the world conference we presume will be subjects relating to the future progress of prestressed concrete into heretofore little explored paths. These will of necessity combine the freedom of form of plastic concrete with the strength of steel, ideally suited to the realization of large structures. We can envisage a new material which may open up unforeseen possibilities in all fields of construction, and combine the advantages of prestressed, prefabricated concrete with the amazing structural properties of curved surfaces. As the present prestressed concrete revolutionized flat-slab design, perhaps mass-production methods using these even newer conceptions will relegate the present rectangular configurations in concrete to the realm of the past.



TRINITY WHITE

Whitest in the bag . . . whitest in the mix . . . whitest in the completed job. Use Trinity White Cement for architectural concrete units; terrazzo; stucco; light reflection—wherever a whiter white or purer colors are desired.

As white as snow

. . . plain or waterproofed

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles

---

NOW MORE THAN **150** LICENSED MANUFACTURERS *Producing*

Patented

homeward ® Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write

ROGER F. WILLIAMS, Licensor

3420 S. W. 9th St. Des Moines (15), Ia.

® homeward is a Registered TRADE MARK

There's a Big Market for QUALITY SEPTIC TANKS!

CARPENTER

Forms and Handling Equipment fit right into the profit-picture for concrete producers. This proved method insures peak production of quality units, with record low time and labor costs. ONE MAN handles our Delivery Rig. Satisfied customers across the country.

Write Today for Details

CARPENTER MANUFACTURING CO.

Harvie Road • Carrier 94 • Box 470 • Phone 2-8938 • Richmond 23, Va.

SAVE FUEL • REDUCE CURING TIME

CUT COSTS • UP PROFITS

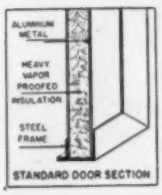
with *Standard* KILN DOORS!

WHERE AISLE SPACE IS LIMITED STANDARD sliding doors need no aisle space. The carrier-type door (shown) requires 15" minimum clearance above top of door opening. A vertical sliding door, counterweighted for easy opening, is also available.

WHERE HINGE-TYPE DOORS ARE PREFERRED Choose from two STANDARD hinge-type doors. The top-hinging door (shown) can be used when there's insufficient room at sides of door. The conventional side-hinging door has rugged hinges and positive-seal lock.

CHECK THESE FEATURES

- √ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.
- √ Rugged Steel Frame.



STANDARD DOOR SECTION

Get the Best — Send for Details Now

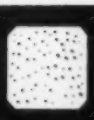
STANDARD DRY KILN COMPANY

P. O. BOX 3708 . . . . INDIANAPOLIS 21, IND.

ATLAS FORMS FOR EVERY PRECAST AND PRESTRESSED USE

Look to Atlas for every type of form for precast and prestressed concrete. Atlas engineers welcome the opportunity to provide services in connection with mold requirements and usage, design methods, plant layout and all other forming problems.

PROMPT SHIPMENTS SEND FOR BULLETIN AND DETAILS

	I BEAMS		SQUARE PILES
	OCTAGONAL PILES		BRIDGE DECKS
	GIRDERS		JOISTS

Consult Us Before Buying Forms for Prestressed or Precast Concrete

IRVINGTON **FORM & TANK CORPORATION**

20 Vesey Street New York 7, N. Y.

"Nifty!" .. JIFFY LIFT (PATENTED)

for loading or unloading Concrete Block, Brick, Stone, Cement, etc.

EFFICIENT • FAST SAFE • PROFITABLE

Three times the deliveries—safe and easy one-man operation.

FOUR WHEEL DRIVE—Smoother—Reduces Slip-page—Safer.

FOUR CABLE SUSPENSION—Lifts 10,000 pounds easily—No Swing.

TWO-SIDE OPERATION—Controls on either side, elminates jockeying.

EASILY INSTALLED—Any mechanic can install on your truck.

TWO MODELS—TWO CAPACITIES—TWO OVERHEAD CLEARANCES

MODEL E 6	MODEL E 7
Handles 180—42 lb. blocks 7560 lbs.	Handles 210—42 lb. blocks 8820 lbs.

ALL PARTS, BOTH MODELS ARE STANDARD ITEMS; EASILY REPLACED IF DAMAGED

Write Today for details and prices

Be sure to visit The Jiffy Lift booth at Concrete Industries Exposition at Kiel Auditorium, St. Louis, Missouri, February 25-28, Booth #71-72-73.

ELBERFELD MANUFACTURING CO., INC. • **ELBERFELD, INDIANA, U. S. A.**

WAL-LOK

MORTAR JOINT REINFORCING

1ST

WITH ARCHITECTS and BUILDERS because WAL-LOK was first . . .

- to use research for product improvement.
- to deform without impairing tensile strength.
- to use projecting Cross Bars — 4 mortar locks at every weld.
- to comply with National Bureau of Standards Recommendations.
- to furnish galvanized Cross Bars.
- to furnish 12' lengths in 300' bundles — fewer splices, less scrap, lower cost.
- to manufacture 8 Gauge Super Standard.
- to insure complete mortar bondage.

DROP IN!
BOOTH 52
Morrison Hotel
Chicago
MCAA—Feb. 10-13
BOOTH 49
Kiel Aud.
St. Louis
NCMA—Feb. 25-28
TICKETS ON REQUEST

YOUR CHOICE: 1. Bright basic Side Rods with galvanized Cross Bars 2. Fabricated from galvanized wire 3. Galvanized after fabrication.

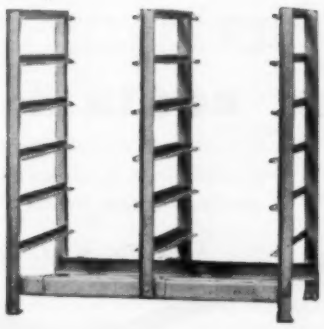
Make WAL-LOK first on your list. Write today for descriptive brochure packed with facts.

WAL-LOK

ADRIAN PEERLESS, INC.
1480 E. Michigan Adrian, Mich.

CHASE BLOCK RACKS, PLAIN STEEL PALLETS

Your best buy



Here's why . . . Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

Chase FOUNDRY & MANUFACTURING CO.
3300 PARSONS AVENUE • COLUMBUS 7, OHIO

Production Schedules SLOWING DOWN?

Speed winter production of concrete products with SOLVAY CALCIUM CHLORIDE

This winter you can *double* output of poured products . . . cut steam curing of pressed and tamped products in *half* . . . handle *twice* your usual volume in your present storage space. How? By adding Solvay Calcium Chloride to your mix. It doubles the early strength —speeds strength development without changing normal chemical action of Portland Cement.

SOLVAY ®

Clip coupon for helpful, informative booklet—*"How To Get Better Concrete Products At Lower Cost"*

Allied Chemical

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

Please send me without cost:
"How To Get Better Concrete Products at Lower Cost"

Name_____

Position_____

Company_____

Address_____

City_____ Zone_____ State_____

CM-1

1 BESSER *Batch Mixer*
2 BESSER *Skip Loader*
3 BESSER *Vibrapac*
4 BESSER *Off-bearing Hoist*

WINNING COMBINATION
for Block Makers . . .

Here is the ultimate in block making equipment . . . the Besser Unitized Vibrapac with Batch Mixer, Skip Loader and Power Off-bearing Hoist . . . *all on one floor.* Steps up block production . . . saves manpower. Produces three 8 x 8 x 16 block (or equivalent) at a time, on one Plain Pallet, with capacity up to 10,000 block per day. Overall dimensions of unitized machine is 37′ long, 14′3″ wide and 23′6″ high.

If you want to increase production of high quality block, consider this winning combination. Ask your nearby Besser representative for literature.

BESSER COMPANY ALPENA, MICHIGAN, U. S. A.

WHEN 100-125 YARDS
A DAY IS ENOUGH—

The 47 Ton Simplex with a two yard batcher will do it.

Charged by two type B enclosed bucket elevators, for aggregate and cement, and equipped with a 100 Bbl. auxiliary cement storage (total capacity 175 Bbl.) and reclaiming equipment, the price is

FOB CAMDEN, OHIO $9753.00

GWYNNE *Concrete Plants*
BIN BATCHER
J. H. GWYNNE, INC. CAMDEN, OHIO

EVENTUALLY

you'll be needing kiln closure equipment—for replacement, modernization, or expansion. So, while at the Saint Louis Exposition (and we sure hope you're coming), be sure to see

BOOTH No. 33

where you'll find the *tough, efficient, trouble-free equipment* you'll be needing—sooner or later.

See you in St. Louie!

Universal
KILN DOORS and DOOR CARRIERS
NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*

UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

Concrete Manufacturer Classified Section

431 S. DEARBORN ST., CHICAGO 5, ILL.

Advertising Rate Per Issue: $12.50 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

FOR RENT

OFFICES
DISPLAY ROOM
WAREHOUSE

Metropolitan area of Washington, Arlington, Va.

4 intercommunicating offices
1 large newly finished show room, 45 x 48 ft.
1 two story warehouse

Be represented in the nation's capital.

Will rent all or any part. Reasonable rent.

CHERRYDALE CEMENT BLOCK CO., INC.
3436 Lee Highway Arlington, Va.

WANTED SUPERINTENDENT

Wanted by a substantial company now producing concrete masonry building units, a superintendent to take charge of designing, building and operating an additional plant in which all types of pre-cast structural shapes will be produced.

Exceptional opportunity for the right man.

In making application, please state experience and salary desired.

Box CM-1172, c/o Pit & Quarry Publications
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

BERGEN TRI-MATIC BLOCK MACHINE

•

Front Pallet Feeder, Zeromatic Control, and Offbearing Hoist, used less than 11 months.

•

Box CM-1182, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

SUPERINTENDENT WANTED

Concrete products and ready-mix plant. Must know all phases of manufacturing and maintenance. Excellent opportunity for go-getter . Complete resumé in first reply. Confidential. Write:

Box CM-1123 c/o The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

POSITION VACANT

Superintendent Ready-Mix Concrete Plant—Portable and stationary. Man must be capable of Ready-Mix Concrete Plant Erection—Personnel supervision and complete maintenance of concrete plant and equipment. Give complete resume of past and present employment and salary desired in first letter.

Company benefits: Health and Group Insurance—Vacation after one year employment.

ADDRESS LETTERS TO:
CONCRETE, INC.
2246 SOUTH CUSTER WICHITA 13, KANS.

SALESMEN WANTED

Prominent Block Machine Manufacturer has several territory openings (Southeast and Mid West) offering good immediate earnings, excellent future potential. Experience selling to Block Plants desired. Write in confidence, sending complete resume of experience and personal data to:

BOX CM-1043 c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

GoCorp Senior Block Machine. 3 years old with moulds for making 4", 6", 8", 10" and 12" blocks. 1-piece chimney unit and attachments for ½ chimney unit. Attachments to make all types of special blocks including 10" return corners. 1 off-bearer complete with magnet and electrical controls.

BOX CM-1083, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY

Used Concrete Block Machine, good condition, 3000 - 4000 blocks per day, plain pallet, including basic machine, moulds, pallets, skip hoist and mixer, rack lift truck.
Will consider purchase of used component parts as follows:
1. Block Machine, Plain Pallet, 4000 - 8" blocks per day.
2. Mixer, 1 cu. yd.
3. Skip Hoist, 1 cu. yd.
4. Small lift truck for mixing racks.

State price and availability with complete details.

Arnold M. Diamond, Contractor
115 Middle Neck Road
Great Neck, New York

PIPE FORMS WANTED

and attachments. Also mold boxes for Fleming 180
MERRIMACK BLOCK AND GRAVEL CO.
36 FIFIELD ST. NASHUA, N. H.

WANTED TO BUY
any part or all!

Columbia Model 8 or 10 Pallets 18 x 18 — ¼ Racks for 18 x 18 Pallets Any Attachments

SMILEY BLOCK COMPANY
P. O. Box 546 Lynchburg, Va.

WANTED

"Mexico City cement admixtures and waterproofing manufacturing company, under American management, is interested in entering into a royalty or profit sharing arrangement with U.S. manufacturer who will supply the formulas and know-how. Highest commercial, banking and moral references. Write:

BOX CM-1113, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

RAPID-FLO ADDITIVE ASSURES BETTER CONCRETE

For manufacturers of concrete products and ready mixed concrete. Just 4 ounces of Rapid-Flo required per sack of cement. Write today for samples - prices.

LAMBERT CORPORATION
HOUSTON, TEXAS · ORLANDO, FLA.

William A. ANTHONY *Engineering Company*

Engineers-Designers of
Complete Plants
Conveying Systems
CONTINUOUS MIXERS, Autoclaves
Special machinery

6656 PEARL ROAD
CLEVELAND 30, OHIO
TUxedo 4-8486

METAL MOLDS & VIBRO—TABLES

Splash-Blocks • Step Treads
Window Wells • Dist. Boxes
Chimney Caps • Wall Cap
Lawn Trim • Stepping Stones

BAR-X
BAR-B-Q and INCINERATOR UNITS

Special Molds Made to Order!

Write Today . . **SPILLMAN MFG. CO.**
Box 534, Station G
Columbus, Ohio

FOR SALE

Concrete Products Plant. Manufacturing Patio tile, a variety of ornamental, and numerous precast concrete products, including pipe and blocks. Own sand pit. Good highway location.

ST. LUCIE BRICK & TILE CO.
Ft. Pierce, Florida • Phone 2310-W

LOWER COST
packer-head wings
Proved to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

Two Viber electric vibrators, shop tested only.

HYDROTILE MACHINERY COMPANY
Nashua, Iowa

SWAP — SELL — BUY

BLOCK MACHINES

Stearns #7 & 9 Jolterates ..... $300.00 each
(Jolterate owners at this price buy one for spare parts.)
Mold Boxes #7 & 9..... 150.00 each
1—12 cu. ft. Kent Mixer with motor... 450.00
1—Y-40 Truckman Fork-Lift 4000 lb. capacity 2000.00
1—George 28 cu. ft. Concrete Mixer... 750.00
1—Continuous Mixer 150.00
2—Air Offbearers Stearns #7 & 9.... 250.00 each
2—Hand Lift Trucks..... 175.00 each
100—Racks for cored steel pallets..... 10.00 each
100,000 pressed steel pallets in stock (Send tracing or sample for quotation).

WRITE • WIRE • PHONE
Mr. McCaughey

Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

GENERAL ENGINES CO., INC.
Route 130 Thorofare, N. J.
Phone: Tilden 5-5400

FOR SALE

UNIVERSAL CONCRETE PIPE MACHINE, Jackets, Pallets and all parts for manufacturing Tongue & Groove Pipe, 21" through 60" — 4 Forms and complete equipment for casting 84" pipe, also other pipe casting forms, for sale for delivery about March or April. Correspondence invited for complete list and prices.

BOX CM-1063, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

FOR SALE

Like new, mobile crane, Bay City, 12½ Ton, Model #150, Machine #6737, 60' boom and 10' jibe, Mounted on a Marmon Truck.

COO-PAR CONCRETE CORP.
BOX 67 MADISON, IND.
PHONE COLLECT—7-3091

CONCRETE PLANT

Johnson 4 Compartment Automatic Concrete Plant with 750 bbl. Silo. 2 c.y. Smith Mixer. Extra equipment for job-site operation.
Available Immediately.
Subject To Prior Sale.

CONSTRUCTION SERVICE COMPANY
P. O. Box 311 - Bound Brook, N. J.

PUMICE

Ideal for split rock and standard block. 8" block has "U" factor below .30 BTU per sq. ft. per hr. cores unfilled. Grade ⅜" to fine $1.75 per cu. yd., mine run $1.50, FOB cars Domingo, N.M. Freight rates on request. Produced by block manufacturers.

LAVA PUMICE, INC.
P.O. Box 387 Albuquerque, N. M.

PLAIN STEEL PALLETS
Guaranteed Quality
Flat • Square • Accurate
GARY STEEL SUPPLY COMPANY
2300 S. Springfield Ave.
CRawford 7-2525 Chicago 23, Ill.

CONCRETE BLOCK MACHINE
FACTORY RECONDITIONED

FMC-180, plain pallet block machine, guaranteed. Comes complete with motors and mold box. Capacity 1400 blocks daily. $2750.00. Financing available.

FLEMING MANUFACTURING CO.
CUBA, MISSOURI

FOR SALE

Approximately 4000 ¼ x 18½ x 26 steel pallets less than 1 year old in clean condition. Can be seen in operation. Selling price, $1.50 each.

MAJESTIC
BUILDING MATERIALS CORP.
8601 Page Ave. St. Louis 24, Mo.

FOR SALE

One L-5 LITH-I-BLOCK three block machine with automatic pallet return. Attachments for making 2" - 4" - 6" - 8" - 10" - 12" blocks; also chimney and manhole blocks. Additional equipment for making special blocks. All equipment is in excellent condition and may be seen in operation at our plant daily until March 1, 1957.

ARTHUR WHITCOMB, INC.
Keene, New Hampshire

FOR SALE

1—18 cu. ft. Stearns mixer with motor
1—18 cu. ft. Skip Loader with motor
1—#7 Jolterate with 4—8—12" mold Boxes
Approx. 6,000 pressed steel pallets 4—8—12"
Hand Lift Truck—35 Racks for Pressed Steel Pallets
23 Ton Winslow Binabatch w/25 ft. bucket elevator
Multiplex Chimney Block Machine—Approx. 150 pallets
Going out of business.

Priced to sell
$6,000.00 F.O.B. Lancaster, Pa.

MARIS L. HACKMAN
1815 Willow Street Pike
Lancaster, Pa.

---

unbreakable
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

PRICED FOR QUICK SALE

1 Go-Corp King Block Machine, complete with spare parts, moulds and a new automatic rackman. All in very good condition. Terms may be arranged.

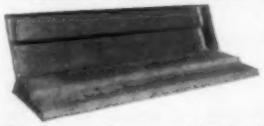
JACKSONVILLE CONCRETE COMPANY
P. O. Box 4556 Jacksonville, Fla.

FOR SALE

New Champion Drain Tile Machine with 4, 6, 8, 10, & 12 inch attachments.
One 3½ Quickway Paddle type mixer, electric Motor driven.
Complete set of Burial Vaults. All steel-vacuum type adjustable forms.

CHRISTENSEN CONCRETE PRODUCTS
No. Highway 281 Box 701 Grand Island, Nebr.
Phone: Dupont 2-0262

HIGH PROFIT LOW COST



Easy Stripping Metal Molds • Send for Free Bulletin

Here is a real money maker for that last bit of good cement from your mixer. Our completely new basement window sill fits 12" and 20" standard basement windows for 32" wall opening. @ $10.00, less 10% discount for ten or more. F.O.B. In lots of 10 they may be mixed for 8" wall 10" & 12" wall.

PARK MOLD & STEP CO.
1020 N. Raymond Rd. Battle Creek, Mich.

HERE'S A REAL BARGAIN IN ALMOST NEW BLOCK PLANT EQUIPMENT

Installed new in May 1956

FLEMING MODEL 180 ONE BLOCK MACHINE

8x8x16—6x8x16—4x8x16

12x8x16 MOLDS... all with half and sash...

1650—1x10x18 AND 800—1x14x18 WOOD PALLETS...

FLEMING MODEL 12 MIXER

FLEMING MOD. 14 SKIP HOIST

25-60 BLOCK RACKS...

See this equipment in operation...

GORDON'S CONCRETE PRODUCTS

405 N. Mason, Ft. Collins, Colorado

GOOD WILL BUILDERS

ADVERTISING NECESSITIES FOR THE BLOCK INDUSTRY. LINE PINS, TWIGS, CORNER BLOCKS, CALCULATORS. COMPLETE CATALOG ON REQUEST.

GERSON CO.

97 Deering Rd. Mattapan, Mass.

CEMENT COLORS

All shades and grades the highest quality. Write for color cards, prices and samples

RICKETSON MINERAL COLOR WKS.

MILWAUKEE 2, WISCONSIN

Established 1885

FOR SALE

Block plant located near Phila. area can be bought as package unit or equipment can be purchased separately.

1 Besser Vibrapac complete with magnetic off-bearer and pallet return.
1,000 Plain Pallets 18⅛ x 26 x ⅞.
4", 8", 12", Mold Boxes.
50 Steel Racks 12 Block capacity.
1 Praschak 30 cu. ft. mixer and skip loader with 20 H.P. motor.
1 Kewanee 50 H.P. Low Pressure horizontal boiler.
1 Hyster fork truck, 4,000 lbs. capacity.
1 Yale electric platform truck with charger, 4,000 capacity.
1 Scoopmobile front end loader, 1 yd. capacity.

CALN BLOCK COMPANY

2471 WAYNE AVE. COATESVILLE, PA.

PHONE 2880

TESTERS

For

BLOCKS
CYLINDERS
CUBES
BEAMS
LINTELS
PIPE AND SLABS

If it's a concrete tester you need—get in touch with

FORNEY'S, Inc.

TESTER DIVISION

P. O. BOX 310 · NEW CASTLE, PA.

FOR SALE

13—Used Steel Racks. Excellent Condition.
48—Block capacity. 18"x20" Pallet size.
Price $25.00 each F.O.B.

GUTH BROS. BLOCK CO.

Route 1, Jackson, Missouri

Telephone: Pocahontas, Missouri 4020

PLAIN PALLET CLEANING

We truck our machine to your plant and supervise entire cleaning and planing off of pallet residue. No need to shut down as we will keep up with production.

EDWARD A. LOBSTEIN

5383 Seminole Ave. Detroit 13, Mich.

Phone: Walnut 3-1155

COLORS *For Cement and Concrete*

COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

LANDERS-SEGAL COLOR CO.

71 Delavan St. • Brooklyn 81, N. Y.

Plant Design Layout Machinery Block

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Specialists in Concrete Products Equipment

Eastern Representatives of the

COLUMBIA MACHINE WORKS, Vancouver, Washington

Elevators Bins Conveyors Feeders

FOR SALE

Lith-I-Bar L-5 block machine, 8 blocks per cycle, 720 per hour. 4" and 8" attachments, spare parts, in good condition, reasonable. Also 30 HP Ingersoll-Rand Air Compressor with Air Receiver and Air cooler, all in good condition, price reasonable.

SPEIGNER CONCRETE BLOCK CO.

DOTHAN, ALA. Phone: 2-5800

FOR SALE

One Praschak, two-block machine, complete with 4" and 8" cored pallets. Good working condition. Bargain.

FLEMING MANUFACTURING CO.

CUBA, MISSOURI • PHONE CUBA 400

FOR SALE

L 5-3 Block Lith-I-Bar Block Machine—1953 Model—with Following Attachments. 4"-6"-8" 12"-Header, Bond Beam, will sell separately, Silo Block. All in Boxes. 1-40 H.P. Worthington Compressor. All This Equipment in No. 1 Condition.

Gilbert Concrete Products Co.

Box 1340 Hendersonville, N. C.

Phone 4463

STEAM CURING MACHINERY & EQUIPMENT

Autoclaves
Quick Opening Doors
Silencers,
Exhausters,
Temp. & Press.
Recording Meters

SHORE ENGINEERING

322 BROADWAY

NEW YORK 7, N. Y.

Kiln Doors & Carriers
Insulated Concrete
Roof Planks
Steam Boilers,
High & Low Press.
Dryers

FOR SALE

New type of Hydraulic Automatic Stone Making machine up to 15000 a day proven completely satisfactory in production. Also available European make excellent Automatic Hydraulic Block and Brick Making machine 5000 and 8000 a day production. Attractive prices. Write for particulars.

TRANSATLANTIC MACHINERY CO.

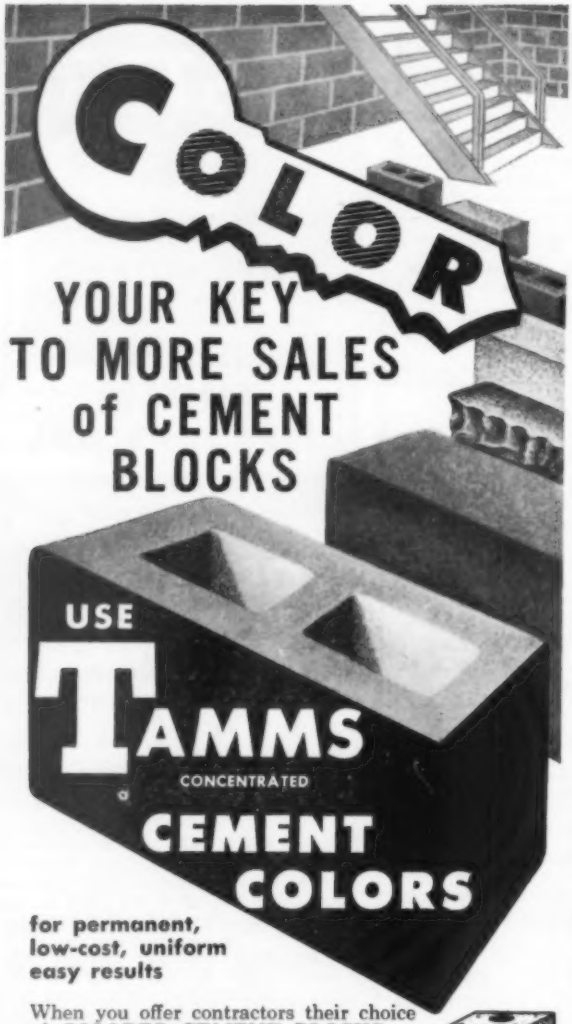
155 King St. E. Toronto, Ont., Canada

Phone EM 4-5816

For Best Results Advertise

in

THE CONCRETE MANUFACTURER'S CLASSIFIED SECTION



for permanent, low-cost, uniform easy results

When you offer contractors their choice of *COLORED* CEMENT BLOCKS or split block in colorful "quarried stone" effects, you offer them *easier* sales, because today's homemakers *want color!* And contractors as well as your "do-it-yourself" trade are quick to see the advantage in *COLORED* cement units that need no finishing, save costly days of time and labor.

24 BEAUTIFUL COLORS

No change in mixing procedures. Just add TAMMS CEMENT COLOR. No guesswork! From six to nine pounds per sack of cement produces deep-shade, non-fading uniform colors every time! And the few pennies per sack of cement adds many dollars' worth of easy, extra volume for you.

SEND THE COUPON for *profit-details* NOW!

TAMMS INDUSTRIES, INC.
228 N. La Salle St. Chicago 1, Ill.

RUSH US — FREE COLOR CARDS for Tamms Cement Colors, complete information on use and prices.

Firm Name_____

Address_____

City_____ Zone____ State_____

Individual's Name_____ Title_____

Concrete Manufacturer

INDEX TO ADVERTISERS

A A Wire Products Co. 371
Adrian Peerless, Inc. 383
American Clay Machinery Division, Huber-Warco Co. 325

Baker-Raulang Co. 301
*Barber-Greene Co. 309
*Bergen Machine & Tool Co., Inc. 344
*Besser Co. 304, 313, 384
*Bin-Dicator Co. 374

Carpenter Mfg. Co. 381
Chain Belt Co. 348
Champ Corporation 373
Chase Foundry & Mfg. Co. 383
Classified Section 385-387
Columbia Machine Works 366
Columbia Southern Chemical Corp. 363
Concrete Transport Mixer Co. 376
*Construction Machinery Co. 392
Cook Bros. Equipment Co. 359

Des Moines Glove & Mfg. Co. 379
Dur-O-wal 377

Economy Forms Corp. 316
Edick Laboratories 391
Elberfeld Mfg. Co., Inc. 382
Erickson Power Lift Trucks, Inc. 393

*Food Machinery & Chemical Corp. 321
Forney's, Inc. 387
Forrer's Division, Spray-O-Bond Co. 379
Four Wheel Drive Auto Co. 331
*Fuller Co. 357

Gas Machinery Co. 367
General Engines Co. 386
GO Corp. 318-319
Gordon's Concrete Products 387
Griffin Corp., Larry 314
Gwynne, Inc., J. H. 384

Huber-Warco Co. 325
*Hyster Co. 369

International Harvester Co., Motor Trucks 326-327
Irvington Form & Tank Corp. 382

***See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK**

NORWALK septic tank molds

engineered to meet your specific handling problems

THE ONE PIECE TANK
With Slab Top

THE TWO PIECE TANK
With Tongue and Groove Seal

THE DEEP TOP TANK
With Air Space Cover

ALL MODELS MEET THE EXACTING SPECIFICATIONS OF FEDERAL, STATE AND MUNICIPAL REGULATIONS

Build approved septic tanks *quicker* and at *lower cost* with NORWALK equipment. Rugged, all steel construction, properly reinforced to insure a good, rigid mold that will give many years of profitable production.

ALL NORWALK TANKS are available in 500 to 1250 gallon capacities and all have removable inspection covers for easy cleaning.

- Distribution box molds and grease trap molds

Write for detailed information **NORWALK VAULT COMPANY • DEPT. CM • NORWALK, OHIO**

For Fast Results . . .

ADVERTISE YOUR USED EQUIPMENT IN

THE CONCRETE MANUFACTURER'S

CLASSIFIED SECTION

"The Marketplace of the Industry"

DEPENDABLE FOR 60 YEARS

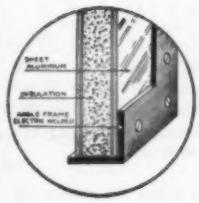
Woven Wire

ALLOY SCREENS

TWIN CITY IRON & WIRE CO.
St. Paul, Minnesota

Moore Carrier-Type Doors at Maule Industries, Miami

Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs — inside the kiln — with Moore Aluminum-Insulated Doors. They improve curing conditions — save steam — last longer.

Send us dimensions of present door openings for quotation.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE, FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND, OREGON

HEAD CLEARANCE PROBLEMS . . . . . ?

your answer is MULTI-LIFT by truck-man

STARTS LOWER • LIFTS HIGHER • FOR LESS

If you have a low entrance, connecting door or are having trouble handling racks in low ceiling kilns, Truck-Man's new Multi-Lift Mast will solve your problem.

- LOWEST DOWN HEIGHT—Only 72" for a full 144" lift—62" for 120" lift—others available.
- INCREDIBLY SIMPLE— no latches, ratchets or complex mechanisms.
- NOT HIGH FREE LIFT—but in most cases it takes the place of HFL and, at much lower cost.
- IMPROVED VISIBILITY—through the mast, below eye level when lowered.
- AVAILABLE NOW—on all Truck-Man indoor and yard high lift models.

SEE MULTI-LIFT BOOTHS 27 - 28 NCMA SHOW

COMPARE DOWN HEIGHTS!

For 144" lift; conventional mast (left) has down height of 92" vs. only 72" for Multi-Lift mast (right). For 120" lift, conventional mast has down height of 83" vs. 62" for Multi-Lift.

Write today for your copy of the folder describing the revolutionary new Multi-Lift mast.

truck-man

DIV. OF THE KNICKERBOCKER CO.
571 LIBERTY ST. • JACKSON, MICHIGAN

Kent Machine Co. 302
Kirk & Blum Mfg. Co. 372

LEAP Concrete, Inc. 370
Lehigh Portland Cement Co. 315
Lone Star Cement Corp. 300

McNamar Boiler & Tank Co. 341
Memphis Equipment Co. 372
Monarch Road Machinery Co. 358
Moore Dry Kiln Co. 389

National Concrete Masonry Assn. 364
National Wire Cloth Co. 377
Noble Company 310-311
Norwalk Vault Co. 389

Olsen Corp., Gene 318-319
Oswalt Engrg. Service Corp. 375

PreCaster, Inc. 360
Presto Brick Machine Corp. 361

Quinn Wire & Iron Works 356

Radio Corporation of America 353

Side-O-Matic Unloader Corp. 332
Sitton Septic Tank Co., Inc., Philip 324
*Smith Co., T. L. 317
Solvay Process Division, Allied Chemical & Dye Corp. 383
Spillman Co., R. L. 386
Standard Dry Kiln Co. 381
*Stearns Manufacturing Co. 394
Superior Pneumatic & Manufacturing, Inc. 379
Surety Rubber Co. 377

Tamms Industries, Inc. 388
Towmotor Corporation 307
Trinity Div., General Portland Cement Co. 381
Truck-Man Division, Knickerbocker Co. 390
*Twin City Iron & Wire Co. 389

Unit Step Form Co. 374
*Universal Door Carrier, Inc. 384

Westinghouse Transit Mixer Division, LeTourneau-Westinghouse Co. 354-355
Williams, Roger F. 381
Worthington Corporation 342-343

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

READY MIX OPERATORS...
STOP BEATING YOUR MIXERS!

***USE* TRANSPARENT, NON-OILY**

DRI-FILM

the AMAZING NEW COATING That....

★ PREVENTS BONDING OF CONCRETE, CEMENT, DUST, AND ROAD DIRT TO TRUCKS AND DRUMS . . . . ELIMINATES ALL POUNDING AND ABUSE.

★ WILL NOT STAIN, DARKEN, DISCOLOR, OR ATTRACT DUST TO YOUR PAINTED EQUIPMENT . . . . REDUCES CLEANING TIME TO MINUTES . . . . KEEPS TRUCKS LIKE NEW.

Here's What DRI-FILM Does For You . . . .

1. Prevents bonding of concrete, dust, and dirt to truck surfaces.
2. Makes cleaning a "breeze".
3. Protects finish and paint.
4. Keeps trucks looking like new.
5. Prevents rust.
6. Slashes cleaning time.
7. Eliminates costly pounding and chipping.
8. Prolongs life and value of your equipment.
9. Simplifies maintenance.

HERE'S HOW:

Just spray or brush a thin coat of DRI-FILM on your mixers once a week. DRI-FILM quickly becomes a hard, dry coating that prevents the adhesion of concrete . . . keeps all the dust and dirt on the slippery coating rather than on the painted truck surfaces. Cleaning becomes a fast easy wash-down with water and a few strokes with a brush! Concrete breaks away easily, dirt and dust flush right off . . . but the DRI-FILM coating stays! One application lasts a week when trucks are washed every day.

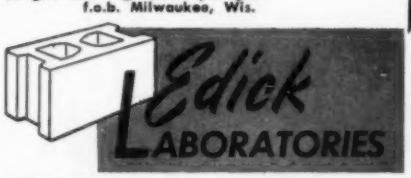
DRI-FILM pays for itself! Drying to a hard, plastic, non-oily film . . . it protects the paint . . . preserves the finish and prevents rusting. DRI-FILM is transparent . . . will not chip off and will withstand considerable abrasion. DRI-FILM costs just a few pennies a day and will save hundreds of dollars in reduced maintenance and painting costs . . . man hours saved . . . increased efficiency of operation . . . plus the advertising benefits of clean equipment.

DRI-FILM costs less than 20c per day per truck. And . . . you will save more than 3 times this amount daily in reduced clean up time . . . plus additional savings on equipment life. *It doesn't cost to use DRI-FILM . . . it pays!*

Send for your trial supply today! Use the coupon below. Available in 5, 30 and 55 gallon drums.

Your truck is your trade mark . . . . Keep it clean!

TRIAL ORDER PRICES
5 gal. can @ $3.45 per gal.
30 gal. drum @ $3.20 per gal.
55 gal. drum @ $3.15 per gal.
f.o.b. Milwaukee, Wis.



427 W. National Ave. Milwaukee 4, Wis.

EDICK LABORATORIES, INC.
427 W. National Ave., Dept. P
Milwaukee, Wis.

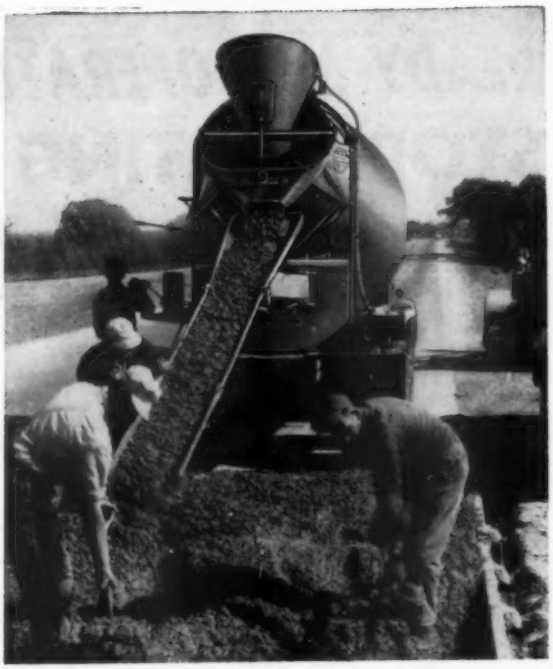
Please rush me.....gallons of DRI-FILM

Co. Name .....
Address .....
City ..... **State** .....
Signature .....

New TED* TRANSCRETES

pare operating and maintenance costs to the bone . . . put bigger profits in every pour!

*Truck Engine Drive



5 to 7 YARD CAPACITIES

Cut-a-way above shows how power is taken from front of engine and transmitted simply, efficiently to drum drive unit.

TED Transcrete users report up to $55 a month per machine saving on gasoline alone.

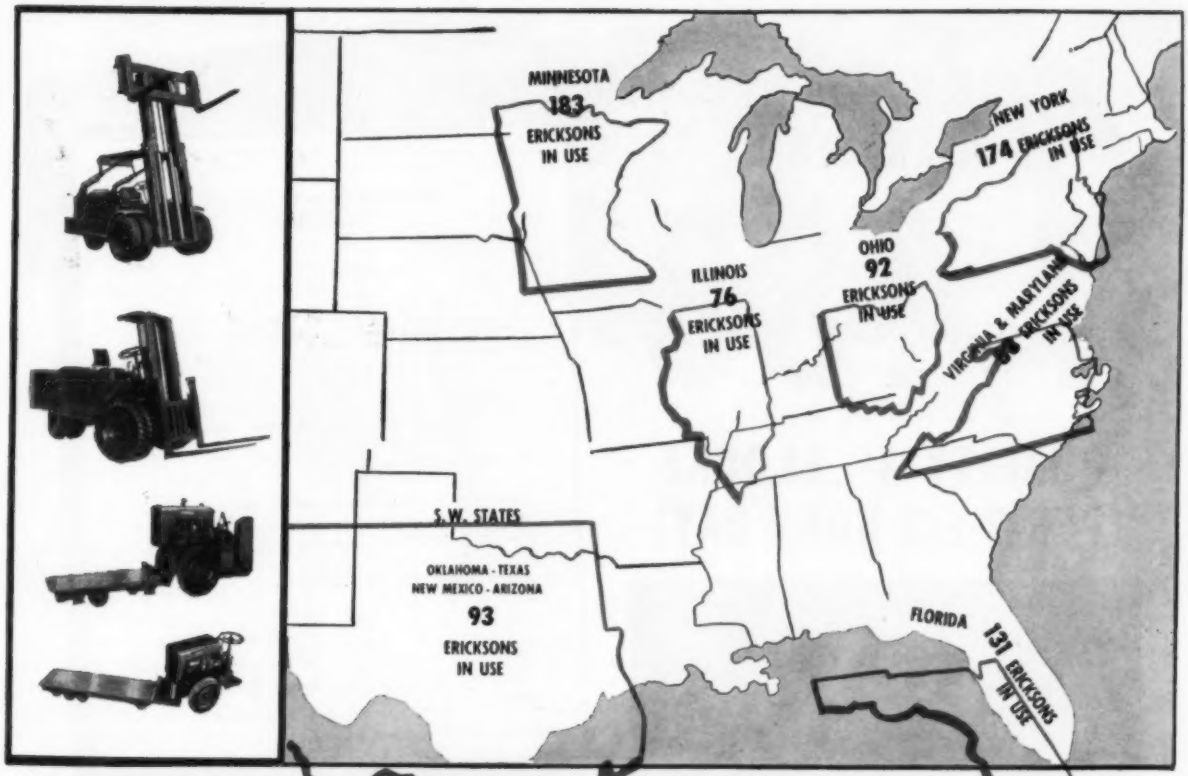
Drum rotation is subject *ONLY* to truck throttle variations . . . giving almost constant drum r.p.m.

Has all the job tested, time proven BIG PERFORMANCE features of other Transcretes — including trouble-free Floating Drive and Swing-Out Hopper. YOUR GUARANTEE OF FASTER CHARGING, MORE THORO MIXING, QUICKER DISCHARGE — AT LESS COST!

ON DISPLAY FEB. 25-28
CONCRETE INDUSTRIES EXPOSITION
Kiel Auditorium • St. Louis

Get full details today. Write for New FREE illustrated TED TRANSCRETE Folder

CONSTRUCTION MACHINERY CO., WATERLOO, IOWA



OVER 1,000 BLOCK PLANTS

cut costs with Erickson the Workhorse of Lift Trucks

Here are some of the concrete block plants who are proven users of Erickson Trucks

Acme Concrete Products Co., Miami, Fl...
Ambridge Cement Block Co., Ambridge, ...
Arizona Precast Concrete Co., Mesa, Arizona
Barnes & Cone, Inc., Syracuse, N.Y.
Beavertown Block Co., Beavertown, Penna.
Bell Supply Co., Pennsauken, N.J.
Bergen Building Block, Inc., Ridgefield, N.J.
Borin Builders Supply, Inc., Detroit, Mich.
Brown Supply Co., Lubbock, Texas
Buehner Block Co., Salt Lake City, Utah
Burnup & Sims, West Palm Beach, Fla.
Campbell Supply Co., Marquette, Mich.
Edward Campbell Co., Vineland, N. J.
Camp Concrete Products Co., Columbus, Georgia
Canton Block & Tile Co., Canton, S.D.
Carter-Waters Corp., Kansas City, Mo.
Central Builders Supply Co., Sunbury, Penna.
Central Building Supply Co., St. Paul, Minn.
Cedar Rapids Block Co., Cedar Rapids, Iowa
Certified Concrete, Inc., Muskegon Heights, Mich.
Chandler Materials Co., Tulsa, Okla.
Cinder Block Co. of Richmond, Inc., Richmond, Va.
Cinder Block, Inc., Detroit, Mich.
Cinder Block & Material Co., Indianapolis, Ind.
Cinder Products, Inc., Cincinnati, Ohio
Clark Concrete Construction Co., Idaho Falls, Idaho
Comac Builders, Rochester, N.Y.
Concrete Building Units Co., Kansas City, Mo.
Concrete Products & Supply Co., New London, Minn.
Concrete Sectional Culvert Co., Fargo, N.D.
Concrete Specialties, Inc., Lyndhurst, N.J.
Connecticut Valley Block Co., West Springfield, Mass.
...ego Block Co., Albuquerque, New Mexico
...
Crumb-Colton Co., Rockford, Ill.
Dakota Lime & Brick Co., Rapid City, S.D.
De Yorgi Bros. Inc., Bronx, N.Y.
Dodds & Fountain, Greggton, Texas
Economy Block Co., Wauwatosa, Wisc.
Edmonton Concrete Block Co. Ltd., Ed. Alb. Canada
Faber Cement Block Co. Inc., Paramus, N.J.
Fairmont Wall Plaster Co., Fairmont, West Va.
Falls Block & Supply Co. Inc., Menominee Falls, Wisc.
Fehr Concrete Pipe Works, Inc., Eau Claire, Wisc.
E. Felicetti & Sons, Niagara Falls, N.Y.
Chas. M. Freidheim Co., St. Louis Park, Minn.
Gage Bros. Concrete Products Co., Sioux Falls, S.D.
Gray Concrete Pipe Co., Thomasville, N.C.
Grays Ferry Brick Co., Conshohocken, Penna.
Hancock Concrete Products Co., Hancock, Minn.
Hemstock Bros., Sparta, Wisc.
E. P. Henry & Son, Woodbury, N.J.
Hi-Way Cinder Blk. & Material Corp., Rochelle Pk., N.J.
Holloway Concrete Products Co., Winter Park, Fla.
Hud-Cin Building Products, Westfield, N.J.
Iowa Concrete Block & Material Co., Des Moines, Iowa
Janesville Sand & Gravel Co., Janesville, Wisc.
Ken-Crete Products Co., Kenosha, Wisc.
Kent Block Co., Grand Rapids, Mich.
William Koenig Co., Cincinnati, Ohio
A. C. Krebs Co., Louisville, Ky.
Louisiana Concrete Products, Inc., Baton Rouge, La.
Madison Silo Co., Winona, Minn.
Maine Cement Products Co., Milford, Maine
Marshall Concrete Products Co., Inc., Mpls., Minn.
Martin Block Co., Lansing, Mich.
Michigan Cert. Concrete Prod., Grand Rapids, Mich.
Model Stone Co., Minneapolis, Minn.
Molin Concrete Products Co., St. Paul, Minn.
Multiplex Concrete Co., East Orange, N.J.
Neff Concrete Products Co., Danville, Ill.
Edgar D. Otto & Son, Albuquerque, New Mexico
V. Paturzo Bros. & Son, Inc., Baltimore, Md.
Peoria Concrete Construction Co., Peoria, Ill.
Picone Brothers, Brooklyn, N.Y.
Powers Builders Supply, Cheyenne, Wyo.
Pre-Cast Concrete Products, Inc., Chicago, Ill.
Price Brothers Co., Dayton, Ohio
Radel Concrete Products, Inc., Cincinnati, Ohio
Rock-Crete Corporation, Ridgefield, N.J.
Schaefer Bros. Builders Supply Co., Rochester, N.Y.
Scioto Building Units Co., Portsmouth, Ohio
L. E. Shaw, Ltd., Nova Scotia, Canada
Stewart & Nattinger, Clinton, Mo.
I. L. Stiles & Son Brick Co., North Haven, Conn.
Geo. Strauss Cinder Block Co., Inc., Denver, Colorado
Supercrete Limited, St. Boniface, Manitoba, Canada
Superock Block Co., Birmingham, Ala.
Tampa Sand & Material Co., Tampa, Florida
Texas Concrete Block Co., Lubbock, Texas
Thorold Concrete Block, Thorold, Ontario, Canada
W. G. Traver Supply Co., Decatur, Ill.
Tri-Mont Block & Silo Co., Monterey, Minn.
United Cement Products Co., Wichita, Kansas
Virginia Dunbrik Co., Inc., Lynchburg, Va.
Worrall Bros. Inc., Louisville, Ky.
Yonkers Concrete Products Co., Yonkers, N.Y.

See us at Booths 55 and 62

N.C.M.A.

St. Louis, Mo., Feb. 25-28

Send for catalog describing the complete line of Erickson fork and platform trucks from 2,000 lbs. to 20,000 lbs. capacity.

ERICKSON POWER LIFT TRUCKS, INC.

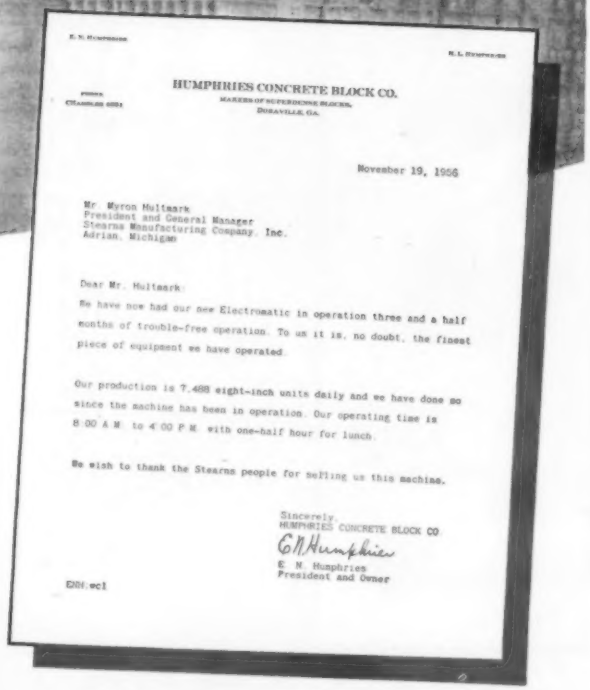
225 St. Anthony Blvd. N. E., Minneapolis 18, Minn.

EXPORT DEPT., Neuert, Wilton & Associates, Inc.
32 W. Randolph St., Chicago1, Ill., U.S.A.

HUMPHRIES CONCRETE BLOCK CO. AVERAGES

7,488

QUALITY 8" BLOCKS PER 7-1/2 HOUR DAY!



HUMPHRIES CONCRETE BLOCK CO.
MAKERS OF SUPERIOR CONCRETE BLOCKS
DORAVILLE, GA.

November 19, 1956

Mr. Myron Hultmark
President and General Manager
Stearns Manufacturing Company, Inc.
Adrian, Michigan

Dear Mr. Hultmark:

We have now had our new Electromatic in operation three and a half months of trouble-free operation. To us it is, no doubt, the finest piece of equipment we have operated.

Our production is 7,488 eight-inch units daily and we have done so since the machine has been in operation. Our operating time is 8:00 A.M. to 4:00 P.M. with one-half hour for lunch.

We wish to thank the Stearns people for selling us this machine.

Sincerely,
HUMPHRIES CONCRETE BLOCK CO.
E. N. Humphries
President and Owner

ENH:ecl

The Stearns Electromatic in operation at the Humphries Concrete Block Company, Doraville, Ga.

Left to right: Mr. E. N. Humphries, President; Mr. H. L. Humphries, Vice Pres. and General Mgr.; Mr. W. C. Lancaster, Office Mgr.; and Mr. W. L. Christopher, Superintendent.

...WITH THEIR STEARNS ELECTROMATIC

The statement, "We wish to *thank* Stearns for *selling* us this machine", so aptly put by Mr. E. N. Humphries, reflects the sentiment of *all* Electromatic users today. OVER 1,000 superior quality blocks per hour, day after day—month after month—assures these enthusiastic Electromatic owners THAT EXTRA BLOCKS . . . MEAN EXTRA PROFITS FOR THEM!

They learn, too . . . that the Stearns Electromatic is *exclusively* designed and built for high speed operation . . . faster cycling *without* machine abuse . . . higher productivity *without* sacrifice of quality . . . lower unit costs and increased profits. So how about *you* . . . write today for full particulars, and the installation nearest to you!

BE SURE TO VISIT STEARNS BOOTH
10th CONCRETE INDUSTRIES EXP.
KIEL AUDITORIUM
ST. LOUIS, MO., FEBRUARY 25-28

ASK ANY OWNER!

STEARNS
MANUFACTURING COMPANY · INC.
ADRIAN, MICHIGAN, U.S.A.

COMPLETE CONCRETE PRODUCTS PLANT EQUIPMENT

Other Non-metals

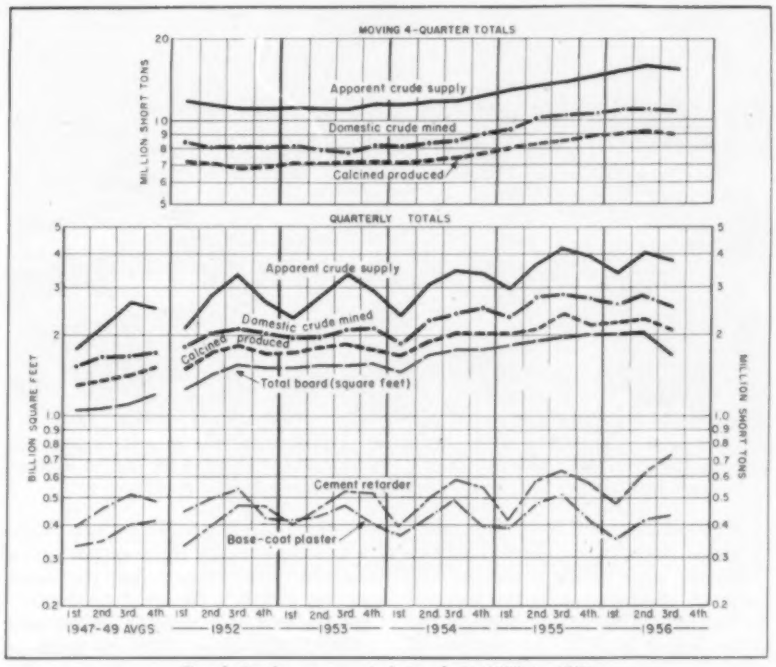
(*From page* 164)

Production of native sulphur not only passed its previous high (1954) in attaining a figure of 5,743,344 long tons in 1955, but the record thus far in 1956 (January-September) shows an increase of 18 percent over the comparable period of the preceding year. On that basis, another new record of more than 6,000,000 long tons may be realized.

Fluorspar production in 1955, as predicted last year, gained ground after suffering a 2 percent drop in 1954, but in lieu of the 1 to 2 percent suggested in the last review it actually showed an increase of 18 percent in arriving at 291,275 short tons. According to the latest Bureau of Mines data covering the first six months of 1956, a substantial gain is in evidence over the corresponding period of 1955. Through the second quarter, a total of 146,909 short tons was produced.

Bauxite tonnage in 1955 did not, as expected, equal the record of the preceding year; the total of 1,745,684 long tons produced was a 10 percent drop. Six months' data on 1956 indicate a decrease of 2 percent in comparison with 1955.

In the absence of 1956 information on some other nonmetallic minerals considered subsequently, general trends may be evaluated in the light of the 1955 summaries prepared by the Bureau of Mines. In that year, phosphate output suffered a setback that was largely attributable to the Florida strike. Production was held near the 1953 record, however. Potash experienced a gain of 6 percent over the previous year in reaching a new peak. Both kyanite and graphite enjoyed a reversal of declines in the earlier year, of 31 and 10 percent, respectively. Mica output continued to rise, and came within 5 percent of the high level attained in 1953.



Trends in the gypsum industry from 1952 to 1956.

In view of the above and following information, it appears that the various nonmetals in the main have established very favorable production and sales levels. The few declines reported have not been excessive.

Estimates made by informed sources of 1956 production in several minerals have a favorable approach. It has been indicated that marketable production of phosphate rock will probably approach the record high of 1954. Potash output is expected to increase 2 or 3 percent, while graphite may show a gain of 5 to 10 percent. Expectations are that strategic domestic sheet mica production has remained about level with 1955, an estimate that also has been made with respect to natural abrasives, feldspar, and clays.

One of three nepheline syenite quarries being developed by International Minerals and Chemical Corp. (Canada), near Havelock, Ontario.

Lime While preliminary figures covering lime sold in 1956 are available only for the first eight months of the year, there is a strong indication that the record production of 9,229,832 tons in 1955 will at least be equalled, if not surpassed. This is possible despite the six-week steel strike during the summer since, as of the first of June, production was more than 300,000 tons ahead of the comparable period in 1955.

By the end of August virtually the entire output estimated as lost due to the strike had been regained, and production stood at 5,973,036 tons—only 2 percent off the 1955 pace—with four months' production remaining. Individual totals for each month through August show that from January to May, inclusive, production levels were from 4 to 18 percent higher than in the corresponding months of 1955. Relative decreases in June—13 percent, July—30 percent, and August—6 percent, due to the summer steel strike, brought the 8-month total down to the figure given above.

Kaiser Gypsum's expanded Long Beach gypsum products plant. The 60 percent expansion program, just completed, increases annual capacity of the plant to 50,000 tons of hardwall and special type plasters and 210,000,000 sq. ft. of gypsum board products.

A breakdown of the 1956 tabulation shows that 78 percent of the 8-month sales tonnage was in the form of quicklime, and the balance in hydrate. This is identical to the same period in 1955. An analysis of consumption gives the following percentages (in order of rank): chemical and other industrial—60 percent; refractory—24 percent; building — 13 percent; agricultural — 3 percent. In the case of agricultural use, this proportion was identical to that of the same period of 1955. However, building and refractory consumption were off 1 and 2 percent, respectively; a 3 percent gain was shown in chemical and other industrial use.

The 1955 Bureau of Mines statistics for the full year are shown by use in the accompanying table. With the exception of a small amount of captive tonnage, the figures are limited to open-market lime.

According to industry representatives, the outlook for 1957 is very favorable. A number of expansion programs have been put in effect, with new kilns replacing older facilities. A growing potential in the field of agricultural applications is recognized, particularly in view of the government's soil stabilization and conservation programs.

Gypsum During the first nine months of 1956, mine production of crude gypsum continued forging ahead to new high levels. While the third quarter production was down from the same period of 1955, the total production for the first nine months of last year —8,005,432 short tons of crude— was 3 percent higher than in the same period of 1955. It is more than probable that the final figures for 1956 will show that the industry has reached a new record of 11,000,000 short tons.

According to Bureau of Mines quarterly reports, all gypsum materials except plaster products and tile were manufactured in increased quantities. Among the individual products, the greatest drop was seen in plasters to mixing plants—a category that decreased 43 percent from the same period of 1955. However, as in the previous year, this represented a nominal percentage of the total tonnage, and was virtually offset by the increase of 15 percent in sanded and premixed perlite plaster.

Impressive gains were indicated as follows: cement retarder—up 13 percent, roof-deck plasters—up 11 percent, and agricultural gypsum—up 10 percent. Lath and wallboard—two of the largest consuming categories—were each up 3 percent.

While domestic production was setting a new high during the period, imports showed a substantial increase of 20 percent. This along with the 3 percent rise in United States output of crude, provided a 7 percent increase in apparent supply to 11,320,911 short tons.

For the sixth successive year, producers' reports to the Bureau of Mines have shown domestic output of crude to be in excess of 8,000,000 tons. As predicted by industry authorities last year, the 1955 production (10,573,363 tons) outdistanced 1954 by 17 percent. As in the preceding year, lath and wallboard production showed exceptional gains, and in lieu of the 7,000,000,000 sq. ft. then predicted, actually passed that estimate by more than 6,000,000 sq. ft.

In view of the impetus being furnished in non-residential construction and in home-improvement fields, industry spokesmen have an optimistic attitude toward maintaining high production in 1957.

Sulphur Production of native sulphur (Frasch) during the first three quarters of 1956 show, at 4,849,313 long tons, an increase of 18 percent over the first nine months of 1955. This is particularly significant in view of the fact that 1955 itself surpassed the 5,515,000 long-ton record of 1954 by 4 percent.

Along with the activity in native sulphur, the production of recovered elemental sulphur (97 percent or greater purity) rose 21 percent to 356,900 long tons during the first nine months of 1956, as compared with the same period of the previous year.

During 1955 sales were even greater than the record production, and as a consequence there was a decrease in producers stocks. The higher production rate of the first nine months of last year, however, has raised stocks to 3,680,784 tons —a 22 percent increase over the comparable period of 1955.

Fluorspar Production of domestic fluorspar during the first two quarters of 1956 totaled 146,909 short tons—a gain of 15 percent over the corresponding period of 1955. With half a year's production remaining for tabulation, slightly more than 50 percent of the 1955 total (291,275 tons) has already been realized.

The final analysis for 1955 as prepared by the Bureau of Mines shows a reversal of the decline (23 percent) experienced in 1954 to the extent of a 17 percent increase. As a corollary, mine shipments, imports for consumption, and consumption also took an upward turn to the extent of 23, 24, and 18 percent, respectively.

OPEN MARKET LIME 1955

	Quicklime (Short Tons)	Percent of Total	Hydrated Lime (Short Tons)	Percent of Total	Total Open-Market Lime
Agricultural	103,467	40	159,286	60	262,753
Building	239,770	19	1,014,150	81	1,253,920
Chemical, Industrial	4,481,377	85	812,096	15	5,293,473
Refractory	2,519,686	100			2,419,686
	7,244,300		1,985,532		9,229,832

In addition to acquiring fluorspar imports for Defense Materials, the government was conducting a purchase program for metallurgical grade material from domestic production. As in the preceding year, acid grade fluorspar held the lead in production tonnage with 55 percent of the total—or 160,000 tons. Metallurgical grade material—104,400 tons—for steel consumption was second, and ceramic use accounted for the balance. The same pattern has been repeated in the figures covering the first six months of 1956. Acid grade has maintained its lead over metallurgical quality, the two tonnages constituting 55 and 37 percent of the total, respectively.

Checking blast holes in Calvert City Chemical Company's fluorspar mine near Calvert City, Ky.

Phosphate Although it was estimated late in 1955, in the absence of final data for the period, that marketable phosphate production had been maintained at the high level realized in 1954, this optimistic viewpoint was not borne out. According to the lastest Bureau of Mines figures, which provide the final tabulation for 1955, the production of phosphate rock ore decreased from the record 45,585,837 tons (13,821,100 tons of marketable product) in the preceding year to 39,670,598 tons of rock (12,265,248 tons of product) in 1955.

This 13 percent decline is considered largely attributable to the prolonged strike in the Florida fields. Despite the setback, however, 1955 output came within 1 percent of reaching the previous record set in 1953.

While Florida and Tennessee were registering decreases in marketable production of 16 and 10 percent, respectively, the Western states —which had suffered a 7 percent drop in 1954—were enjoying a 17 percent increase during this period.

Florida, with a marketable production of 8,747,282 long tons, accounted for 71 percent of the national total. Tennessee's output represented about 12 percent, while the Western states — Idaho, Wyoming, Montana, and Utah — produced the balance.

Potash According to reports made by producers to the Bureau of Mines, the upward trend experienced in 1954 continued to new highs in 1955. The 3,505,505 tons of marketable potassium sales (2,064,808 tons K_2O equivalent) produced represented a 6 percent gain over the preceding year and established a new high.

Both sales and apparent consumption of potassium salts increased at the rate of 4 percent, it was reported. At an average value of $22.51 per ton, a plant value of $76,551,000 was realized on 2,003,578 tons sold. The apparent consumption of 3,500,921 tons was only 4,600 tons less than produced.

Combined output of manure salts and muriate of potash showed a gain of 5 percent, as compared to the nominal increase realized in the preceding year. Sulphate of potash, including sulphate of potash-magnesia, recorded a rise of about 7 percent.

In domestic production New Mexico maintained its dominant position and again supplied 91 percent of the total. California and Utah contributed the balance. Development of another mine in New Mexico during 1955 was reported by the National Potash Company.

Feldspar While statistics subsequent to 1954 have not been prepared, the data for that year were not available during preparation of last year's review, and are therefore included in this report. According to producer reports submitted to the Bureau of Mines, the production of crude feldspar decreased 9 percent in quantity and 24 percent in value from 1953. Both figures represent the lowest point since 1951.

According to the 1954 Bureau of the Census report, the first base year since 1939, 711,000 long tons of feldspar were produced in 1954. North Carolina continued to be the largest producer, providing 56 percent of the total output of crude spar. However, that state produced 3 percent less than in the preceding year. Colorado and California were the only states of the eleven producing feldspar to report increases over 1953.

Kyanite Reversing the drop experienced in 1954, domestic kyanite production showed an increase of about 31 percent in crude and approximately 45 percent in refined material in 1955, as reported to the Bureau of Mines. Sales increased about 46 percent in both quantity and value during the same period.

Due to the fact that only two producers are involved — Commercial-ores Inc., working deposits near Clover, S.C., and Kyanite Mining Corp., near Farmville, Va.—mine production statistics cannot be divulged.

Graphite World production of natural graphite in 1955 rose 57 percent over 1954, reversing the downward trend, reported last year, which started after the end of hostilities in Korea.The 290,000-ton total was exceeded only by the 294,000 and 299,000 short tons reported in 1942 and 1943 respectively, according to the Bureau of Mines.

In accord with the world-wide picture, domestic production of crystalline and amorphous graphite rose about 10 percent in 1955. Graphite Mines, Inc., Cranston, R.I. maintained its uninterrupted output of amorphous material, while Southwestern Graphite Co., Burnet, Tex., resumed mining and milling operations after a 14-month shutdown.

Imports for consumption in the United States increased 19 percent in 1955, and exports rose from 798 to 1,394 short tons. While consumption value in 1954 dropped about 10 percent from the previous figure, this

value — $6,289,416 — in 1955 represents a gain of 43 percent over the preceding year.

Mica Fabrication of muscovite ruby and nonruby block and film mica, and phlogopite, as reported to the Bureau of Mines for 1955, totaled 4,091,199 lb. — a 27 percent increase over the 1954 figure. Production in 1955 came within 5 percent of the 4,300,000-ton output of 1953 — the second-highest year, tonnage-wise, since 1880.

Electronic applications consumed about 60 percent of all qualities. Consumption of the nominal amount of phlogopite block mica — 10,788 lb. — was for nonelectronic uses.

The number of plants reporting in 1955 was 24, or five less than in the preceding year. Of the nine states in which these plants are located, North Carolina, with 4 plants, was the largest individual producer — accounting for 972,290 lb., or nearly 24 percent. Along with New York (4 plants) and New Jersey (5 plants), the three states accounted for nearly 55 percent of the total.

Clays Although the latest data on hand for these commodities are 1954 statistics, this information was not available at the time of last year's survey, and it is therefore incorporated here as the latest obtainable on a country-wide basis.

Among the various users of clay, the lightweight aggregate industry registered the greatest increase in consumption, 33 percent. However, principal areas that reported decreases included the following: rotary drilling mud, 21 percent; refractories, 20 percent; paper, 2 percent; rubber and cement, 1 percent each.

Kaolin production, which increased less than 1 per cent in 1954 over the preceding year, realized a fourfold increase in value. The two leading states, Georgia and South Carolina, accounted for 70 and 17 percent of the total output, respectively. In line with earlier years, paper, rubber, and refractory industries were among the leading consumers and accounted for 75 percent of total production.

Ball clay producers reported a 9 percent increase in tonnage for 1954 in surpassing both the two previous years. Production in 1954 came to 328,185 short tons, with a value of $4,168,570 — the latter representing the striking gain of 25 percent. Refractory use of ball clay increased 33 percent and represented 8 percent of the total output. Since 1943 Tennessee has been the largest producer state and maintained this position in 1954, accounting for 59 percent of the nation's production. The latter figure represents an increase of 17 percent over the preceding year.

Bentonite producers enjoyed the second-largest year in the history of the industry during 1954. The quantity produced — 1,281,393 short tons — is second only to the peak year of 1952, when an output of 1,317,979 tons was recorded. Petroleum and foundry industries consumed 89 percent of the total output. This was broken down as follows: rotary drilling mud, 43 percent; filtering and decolorizing oils, 23 percent; and foundry sand bond, 23 percent. In comparison with 1953, filtering and decolorizing use gained 20 percent, while mud and sand bond usage decreased 6 and 15 percent, respectively.

Fire clays sold or used in the United States decreased 13 percent during 1954 to a total of 8,904,269 short tons. The slackening of refractory consumption by the steel industry was a prime factor. Refractories, even with a 21 percent decrease from 1953, consumed 4,244,911 short tons, or nearly 50 percent of the total. In 1954 Ohio ranked first in fire clay output with 2,568,627 short tons, followed by Pennsylvania and Missouri. These three states accounted for nearly 64 percent of the total production.

Asbestos Sales of asbestos, according to Bureau of Mine reports for 1954, the most recent year on which final figures are available, decreased 13 percent from the all-time high reached earlier. As in the previous two years, domestic sources supplied only 7 percent of United States requirements, and Vermont remained the principal producing state.

Apparent consumption figures indicate 724,117 tons used, of which 678,390 tons were unmanufactured imports. The 2 percent decrease in the latter figure continues a downward trend that started in 1952.

Bauxite According to preliminary Bureau of Mines figures on the first two months of 1956, it appears that domestic bauxite production for the full year will closely approximate the 1955 output. As of the end of June last year, dried equivalent of mined production stood at 958,998 long tons. This was about 2 percent less than the corresponding period of 1955.

Although it was estimated in last year's survey that 1955 production would equal the record of 2,005,927 long tons established in 1954, this failed to materialize. Output during the last two quarters did not maintain the previous pace, and the final figure for the year was 1,818,038 long tons, or a decrease of about 9 percent from the 1954 high.

Analysis of preliminary import figures for January-June, 1956, shows that there was an increase of about 21 percent over the same period of the preceding year. If the rate holds constant for the balance of the year, the total new supply for consumption may well equal or surpass the 1954 peak of 7,264,457 long tons.

As in preceding years, Arkansas constitutes the main source of United States production—providing, in 1955, 96 percent of the total. Plans for the construction of two new plants were announced during the year. The Aluminum Company of America expects to build an alumina plant adjacent to its primary smelter at Point Comfort, Tex., and the Harvey Aluminum Company proposes to erect a reduction plant at The Dalles, Oreg.

Alumina for the latter facility will be provided under contract by two Japanese producers. According to Bureau of Mines data, this is the first time that alumina from a foreign source will be used commercially in the production of aluminum in the United States.

Talc In 1955, for the first time according to the Bureau of Mines mineral market report, the combined mine production and total sales of talc, soapstone, and pyrophyllite exceeded 700,000 tons as reported by producers. The quantity produced—725,708 short tons—was 13 percent higher than the previous record established in 1953, and 17 percent above the 619,000-ton output of 1954. Sales in 1955 increased 20 percent in quantity and 21 percent in value in comparison with 1954.

Talc and soapstone production increased 15 percent, it was reported, while pyrophyllite output gained 25 percent.

In order of consumption, the following industries accounted for 84 percent of the talc and soapstone sold: ceramics—31 percent, paint—21 percent, roofing—11 percent, insecticides — 11 percent, rubber — 6 percent, and asphalt filler—4 percent. Of the total pyrophyllite sold, the following consumed 95 percent: insecticides (35), ceramics (25), refractories (15), asphalt filler (10), and paint (10).

Advertising rate per issue:

$10.50 per column inch. Lower rates for larger space used and/or on a contract basis.

Write for rate card.

Closing date:

20th of month preceding date of publication.

PIT & QUARRY
431 S. Dearborn St. Chicago 5, Ill.

BROADCAST

Section

CHIEF ENGINEER

Leading Company in Materials Handling Field has a challenging opening for a top-flight Aggregate Plant Designer. Must be familiar with plant layout, equipment selection and steel design. Job location in New York area.

- Salary open
- Exceptional Employee Benefit Plan
- A future with a good present

Send resume including salary requirements to:

BOX PQ-1053 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

EXPERIENCED GEOLOGIST

Man to conduct field investigations of sedimentary geology for purpose of developing sources of raw materials for portland cement. Headquarter in Chicago but be free to travel. Give full details and salary desired.

Reply to

BOX PQ-9102, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

HELP WANTED

Qualified personnel to work on erection of new cement plant at Grand Bahama Islands, 60 miles from Palm Beach. Permanent job available on completion of plant to run operation. Electrical, mechanical, millwrights, chemists and management personnel.

INTERNATIONAL ENGINEERING ASSOCIATES, LTD.
654 Madison Ave. New York 21, N. Y.

WANTED

Mechanical Engineer needed by large cement company. Opportunity for training and advancement. Write, giving complete details of education, experience and salary desired. Confidential.

Box PQ-1212, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

Geologist with engineering experience by a large cement company. State education, experience and salary desired. Must be willing to travel.

Box PQ-1222, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED GENERAL MANAGER

Large midwest quarry is seeking an experienced resident plant manager. Plant personnel consists of well qualified department heads under competent general supervision and engineering staff. Applicants must be experienced in all phases of crushed limestone production for metallurgical and construction purposes, personnel management, labor and public relations and purchasing. Give complete personal data, age, education, experience and references. All replies will be treated confidentially.

Box PQ-1132 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Professional Services

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer
75 Second St.
Newburgh, N. Y.
Phone: 1828

9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Construction
Design
Operation
Plant Layout
Appraisals

SALES ENGINEER

Wanted by Crusher Manufacturer located in midwest. 30-35 age desirable, with experience in reduction machinery. Some customer contact and inside sales work. Such as correspondence, Etc. Excellent opportunity. Write to:

Box PQ-1062 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

JOHN F. MEISSNER ENGINEERS INC.
CONSULTING & DESIGNING ENGINEERS
BULK MATERIALS HANDLING
SPECIALISTS IN DESIGN OF CRUSHED STONE, SAND, GRAVEL AND READY MIX PLANTS
308 W. WASHINGTON • CHICAGO 6, ILL.

FOUNDATION TESTING, CHEMICAL ANALYSIS
CORE DRILLING
Thomasville Drilling & Testing Co.
THOMASVILLE, PENNA.

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

JOHNSON SOILS ENGINEERING LABORATORY
Foundation Design—High & Airport Pavements—Construction Control—Load Tests—Shear & Consolidation Tests—MOBILE LABORATORIES.
193 West Shore Ave. Bogota, N. J.
Bogota-Hubbard 7-4408

REFER TO THIS SECTION WHENEVER YOU NEED PROFESSIONAL ADVICE IN YOUR FIELD.

HELP WANTED

Chemist or assistant chemist familiar with cement plant analysis and operation. Permanent position. Freeport, British West Indies, 60 miles from Palm Beach. No taxes on earnings.

INTERNATIONAL ENGINEERING ASSOCIATES, LTD.
654 Madison Ave. New York 21, N. Y.

BONDED EQUIPMENT BARGAINS

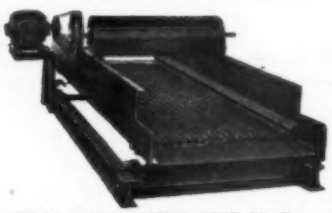
IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE

NEW BONDED® HEAVY DUTY VIBRATING SCREENS

Model Number	No. of Decks	Screening Area	Sale Price
124AS	1	2'x4'	$ 443.00
224AS	2	2'x4'	472.00
126AS	1	2'x6'	472.00
226AS	2	2'x6'	501.00
136AS	1	3'x6'	581.00
236AS	2	3'x6'	688.00
336AS	3	3'x6'	956.00
138AS	1	3'x8'	675.00
238AS	2	3'x8'	815.00
338AS	3	3'x8'	996.00
336BS	3	3'x6'	1303.00
436BS	4	3'x6'	1447.00
138BS	1	3'x8'	1231.00
238BS	2	3'x8'	1282.00
338BS	3	3'x8'	1375.00
248BS	2	4'x8'	1865.00
348BS	3	4'x8'	2035.00
2410BS	2	4'x10'	1953.00
3410BS	3	4'x10'	2305.00
2412BS	2	4'x12'	2319.00
3412BS	3	4'x12'	2635.00
4412BS	4	4'x12'	2833.00

HEAVY DUTY MODELS, TYPE BS: Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14', 1 to 5 decks. Write for New 8-page Bulletin No. 1087.

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



GENERAL DUTY SCREENS, TYPE AS: Eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4 to 3' x 8'. Write for New 8-page Bulletin No. 1086.

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2 1/4" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, 1/8" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Conveyor Prices Include Belting

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1397	$ 722
14"	50'	2222	1144
14"	85'	3377	1733
16"	20'	1262	638
16"	45'	2137	1088
16"	60'	2662	1359
16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1168
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
18"	130'	5362	2797
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
20"	90'	4052	2145
24"	25'	1590	898
24"	45'	2430	1330
24"	70'	3480	1875
24"	100'	4740	2514
24"	120'	5580	2950
24"	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
30"	90'	4831	2614
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096
36"	100'	5718	3214

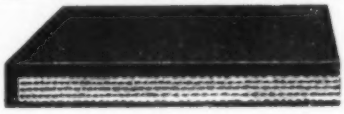
For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	$16.84 per foot
For 16" belt	18.04 per foot
For 18" belt	19.24 per foot
For 20" belt	20.37 per foot
For 24" belt	21.78 per foot
For 30" belt	24.75 per foot
For 36" belt	27.95 per foot

BONDED TROUGHING IDLER CONVEYORS ARE ALSO AVAILABLE WITH TRUSS TYPE CONSTRUCTION. WRITE FOR DESCRIPTIVE INFORMATION AND PRICES.

NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck 1/8" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



Width	Ply	List Price	Sale Price
14"	4	$3.52 foot	$2.83 foot
16"	4	3.96 foot	2.97 foot
18"	4	4.38 foot	3.29 foot
20"	4	4.83 foot	3.80 foot
24"	4	5.68 foot	4.26 foot
30"	4	6.97 foot	5.21 foot
36"	4	8.26 foot	6.18 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/8" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. This belt is for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

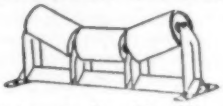
Width	Ply	List Price	Sale Price
16"	4	$4.71 foot	$3.46 foot
18"	4	5.23 foot	3.83 foot
20"	4	5.73 foot	4.37 foot
24"	4	6.74 foot	4.94 foot
30"	4	8.28 foot	6.07 foot
24"	5	7.90 foot	5.78 foot

The following belts are 5-ply, 32 oz. duck:

Width	Top Cover	Bottom Cover	List Price	Sale Price
24"	1/8"	1/16"	$ 8.56 foot	$ 6.42 foot
30"	1/8"	1/16"	10.52 foot	7.89 foot
36"	3/16"	1/16"	14.21 foot	10.66 foot

Other widths, plies, duck weights and cover thicknesses available at low prices. Write for Free Sample.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well known makes. Furnished with easily replaceable pre-lubricated sealed ball bearings. Also, can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers also available from $61.00. Write For Bulletin #1138.

NEW BONDED® FEEDERS

Write for Bulletin No. 1140

Priced from $255.00

NEW BONDED® FLIGHT CONVEYORS

Write for Bulletin No. 1139

Priced from $463.00

BUILD IT YOURSELF WITH BONDED CONVEYOR PARTS & ACCESSORIES

Return Belt Guide Idler $11.75

Carry Belt Guide Idler $14.50

Head & Tail $149.00

Self-Aligning Idler $60.75

Flat Roll Idler $13.50

Holdback $99.00

YOU ARE WELCOME to Visit the Bonded Factory Any Time.

Wing Pulley $71.00

Screw Takeup and Frame $30.25

Rubber Disc Impact Idler $61.00

1 H.P. Speed Reducer $59.50

More than 5,000 Mines & Quarries Have Modernized with Bonded Equipment.

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2186, Days
110 BELLVIEW

WRITE FOR FREE CATALOG AND PRICES

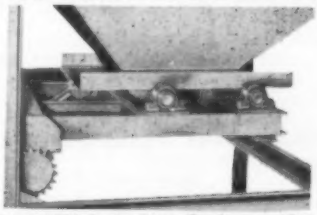
Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

PHONE: AX. 1-2213, Evenings
COLUMBUS 7, OHIO

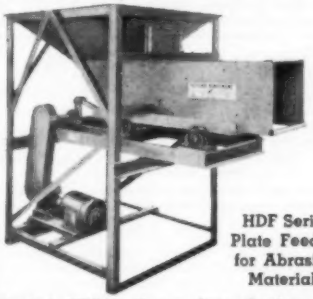
BONDED EQUIPMENT BARGAINS

IMMEDIATE SHIPMENT FROM OUR FACTORY — WRITE, WIRE OR PHONE

NEW BONDED® PLATE FEEEDERS



Bonded "FP" Series Plate Feeders are for all non-flushing bulk materials. Coal, Cinders, Crushed Stone, Chemicals, Wood Chips are only a few of the materials which can be carried. Especially suited for installation under your present bins, hoppers and silos. Furnished with or without hopper. Capacities to 100 TPH. *Write for Bulletin #1140.*
Priced from $232.00



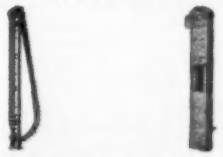
HDF Series Plate Feeders for Abrasive Materials

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock. Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Feeders are process control instruments as well as material movers and help to prevent screens, crushers, grinders, etc., from being run empty, choke fed, or overloaded. Capacities to 250 TPH. *Write for Bulletin #1182.*
Priced from $595.00

"F" Series Plate Feeders

Bonded "F" Series Plate Feeders for controlled feed of Clay Products, Coal, Cinders and other bulk materials. Built of structural and sheet steel. Welded construction for maximum strength. Four models. Variable speed control. Furnished with or without steel storage hopper. Capacities to 225 TPH. *Write for Bulletin #1140.*
Priced from $633.00

NEW BONDED BUCKET ELEVATORS



OPEN ELEVATOR ENCLOSED ELEVATOR

Bonded makes Open or Enclosed, Vertical or Inclined Bucket Elevators with continuous or spaced buckets mounted on chain or belting. They are recommended for small to medium size lumps, fine abrasive material such as dry sand, coke breeze, wet slag and many other bulk materials. Because of the wide variety of sizes and types, prices will be quoted on request. *Write for Bulletin #1047.*

NEW BONDED® FLIGHT CONVEYORS

Bonded flight conveyors are fast, efficient and economical. Used in movement of Gravel, Broken Rock, Coal, Cinders, Slag and other bulk material at angles up to 45 degrees. Made with an all steel truss framework and double guided chain. Flight sizes to 6" x 24". Made in portable and stationary models. Portable models are mounted on semi-pneumatic rubber tires and can be used to unload trucks, railroad cars, hoppers, etc. Ideal for feeding crushers, vibrating screens and other processing equipment. *Write for Bulletin #1139.*
Priced from $463.00

WRITE FOR FREE CATALOG AND PRICES

BONDED SCALE AND MACHINE COMPANY

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders
110 BELLVIEW, COLUMBUS 7, OHIO — Phones: HI 4-2186; AX 1-2213, Evenings

---

WANTED

Equipment Maintenance Superintendent. A challenging position is now open to the right man to take charge of one of the largest fleets of on and off highway trucks, bulldozers, cranes, shovels, and other contractors' equipment in the United States. Please write, giving employment history and salaries earned.

BOX PQ-1023 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

SUPERINTENDENT FOR LIMESTONE CRUSHING OPERATION IN THE MIDWEST. STATE EXPERIENCE, QUALIFICATIONS, AGE, AVAILABILITY AND SALARY DESIRED. WRITE:

BOX PQ-1103, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

CRUSHERS WANTED

One Jaw Crusher 24x30 up to 30x40.
One McCully No. 6 Fine Reduction Gyratory Crusher or equivalent.
Send all information in first letter.
Box PQ-1073, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY

Log washer, must be in good condition, give full details in first letter.

F. RADANDT SONS
2418 S. 18th St. Manitowoc, Wis.

WANTED

Komarek-Greaves briquetting machine. Will consider any size and condition.

Box PQ-1013 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY

ROTARY DRYERS
ROTARY KILNS
BALL & ROD MILLS
DIESEL LOCOMOTIVES & CRANES

R. C. STANHOPE, INC.
60 E. 42nd St., New York 17, N. Y.

FOR SALE

GRANITE ROCK DEPOSITS

QUARRY STRIPPED AND READY TO OPERATE

EXCELLENT LEASES

WRITE:

BOX PQ-1232 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

CYLINDER HEAD REBUILDING SERVICE

CRACKS REPAIRED
MACHINED READY-TO-INSTALL
VALVE GRINDING
PRESSURE AND MAGNETIC TESTING

INTERNATIONAL
CATERPILLAR
G. M. C.
BUDA
etc.

GAS AND DIESEL

CHAPIN CYLINDER HEAD CO.

9 miles west of Jacksonville in
CHAPIN, ILL. PHONE #8

WANTED
Pan or Apron Feeder

Used, good condition big (the bigger the better) apron or pan feeder to feed 36" x 48" jaw crusher. Must be able to handle raw limestone passing 1½ yard bucket and reasonable in price.

PAUL LIME PLANT
Paul Spur, Arizona

WANTED

Good Used 18" & 24" Trough Idlers, any amount.
Jaw Crushers, all sizes.
Gearmotors 3 to 15 H.P.
Late Model Vibrating Screens.

FOR SALE

700 KW Generator Set, Diesel.
350 KW Generator Set, Diesel (2).
84 KW Generator Set, Diesel.
Seco Screen, 4x14, 3 deck.
Seco Screen, 4x10, 2 deck.
Seco Screen, 4x8, 2 deck. (3)
Revolv. Screen, 48" x 20', trunnions.
Niagara Screen, 18" x 72", 1 deck.
Pennsylvania Hammermills, SXT-14, with 450 H.P. GE Motors (2 available).
Dodge Lever Type Jaw Crusher 9" x 15".
Climax Jaw Crusher 10" x 20", new jaws.
Champion Jaw Crusher 12" x 26".
Acme Jaw Crusher 10" x 18".
S-A Hammermill, Knittel Type.
10" Enclosed Elevator, Belt.
8" Enclosed Bucket Elevator.
6" Enclosed Bucket Elevators (2).
Conveyor Belt 36" x 311', 5 ply.
Misc. Size Large Conveyor Pulleys.
New Idlers, 18" and 24".
Trough Idlers, antifriction, 48" & 42".
36" Trough Idlers, 5 roll type (69).
Screw Conveyor & Parts, 6" to 16".
Telsmith Sand Rewasher 28" x 12'.
Small Gasoline Water Pumps.
Westinghouse Flexarc Portable gas driven Welder on Pneumatics.
SACO Speed Reducers, 4 to 60 H.P. (9)
Parallel Shaft Reducers, 25-150 H.P. (11).
Wright 8 Ton Chain Hoist.
15 Ton Stiffleg Derrick, 110' Boom.

G. A. UNVERZAGT & SONS INC.
136 Colt St. Irvington 11, N. J.

WANTED

Industrial Sand Plant in New Jersey has opening for man to assist Superintendent in the operation and maintenance of Plant machinery and equipment. Knowledge of conveyors, elevators, pumps, mechanical and electrical equipment essential. Good opportunity for the right man. Give complete personal data, age, education and experience. All replies will be treated confidential.

BOX PQ-1033 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

Planer for Marble and Limestone.

WENZ COMPANY, INC.
1928 Hamilton St. Allentown, Pa.
HEmlock 4-6157

FOR SALE

TD18 International Bulldozer w/ $600.00 worth of new Track Parts. Engine and rest of tractor in good shape.....$2,500.00
C-2 Tournadozer, fair shape..... 3,500.00

WANTED

Shovel Front For Osgood Model 700 1¼ yard.

Demsky Coal Company
R. D. #2 - Beach City, Ohio

MAGNETIC PULLEYS

6—Dings Electro, 220 volts D. C. 12" dia., 22" face, 2" shaft, length of shaft 50".
5—Dings Electro, 220 volts D. C. 12" dia., 16" face, 34" shaft, shaft dia. 2".
Used, but in good condition.

PHILADELPHIA TRANSFORMER CO.
Box 566 Dalton, Pa.
Phone 3-4811

Tractors - Parts

Gas or Diesel
Crawler Or Wheel Type

WITTEN & SONS
Des Moines, Iowa - CH 3-1274

NEW SURPLUS REPAIR PARTS
SHOVEL & CRANE
25% Discount—All Mfgs.

CONTRACTORS SERVICE CO.
P.O. Box 561 Riverside, Calif.
Phone: OVerland 9-2921

FOR SALE

All steel, all electric, 8 Inch Hydraulic Dredge, with 40 foot Swintek digger, complete with discharge line, power cable, etc. Built in 1955. $87,500.00

PERRY SAND & GRAVEL CO.
Box 345 Perry, Iowa

JAW CRUSHERS—6" x 3" to 60" x 48"

Before buying or selling any
FARREL-BACON JAW CRUSHERS
It will pay you to consult

BACON-PIETSCH Co., Inc.
Engineers & Manufacturers Send for Catalogue
Montclair, N. J.
22 Park Street

Machine Shop Facilities

FEEDERS
Conveyors, Screens, etc.

FOR SALE

Ready Mix—Sand & Gravel Business in Northern Michigan. Complete equipment including 2 Bedroom Home. Serving 40,000 population. Also several large industries. No competition. Reply to:

Box PQ-1093 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE OR RENT

1—Unused 25-ton Wiley Model E steel stiffleg derrick for hook work. 60' boom, 12' bullwheel, rated 25 ton @ 38' or 10 ton @ 50'. Wt. 26,000#.
1—American Model 530-70 steel stiffleg derrick #190287. 12' bullwheel, 70' boom. Rated 10-ton @ 28' with 50' boom, 8-ton @ 38' with 70' boom. Wt. 15,780#.
1—20-ton American Model 836 steel stiffleg derrick #195016, 50' boom, 12' bullwheel. Rated 26,000# @ 48'.
1—100 KW Ideal AC Diesel Generator, 127/220/230/400/440 volt, 50 or 60 cyc., 3 ph. Equipped with Hercules DNX 6 diesel eng. #1051082. On steel skids. Wt. 16,170#.
10—Gardner Denver stationary 2-stage air-cooled compressors. 50 cu. ft., Model ADY, Class R, powered with 15 HP 440 V motors.
1—78 HP Clyde frame 5 3-drum diesel hoist with attached swinger. Rated 8000# @ 250 FPM. With International Diesel eng. Wt. 11,500#.
1—100 HP 3-drum American Model 100-3D diesel Hoist with attached swinger. Rated 10,000# @ 240 FPM. With 100 HP Caterpillar diesel engine Model D8800 with 2-cyl. gas. starting engine. Wt. 19,275#.
4—8-ton Standard Gauge Locomotives: 3 Brookville, 1 Plymouth.
9—10-ton Plymouth Standard Gauge Diesel Locomotives Model BFA.

Write for New Stock List No. 456

EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, Pa., Box 608P, Sub. of Philadelphia
GROVETON, PA., Box 43P, Sub. of Pittsburgh
CHICAGO 4, ILL. 327P S. La Salle St.
NEW YORK 7, N. Y. 30P Church St.

FOR SALE

One 4 x 8 Hardinge Rod Mill complete, including speed reducer, 50 H.P. motor, rods and Slurry pump—$9500.00—F.O.B. Martindale, New York. Write

BOX PQ-8072 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

MANUFACTURERS REPRESENTATIVE

Established Eastern Penna. seeks an additional item. Experienced mature sales force calling on quarries, heavy equipment operators, and foundries.

A. KRUM ASSOCIATE
P. O. Box 8 Tel. 4-0927
Reading, Pa.

FOR SALE

Sauerman slack-line cableway (dragline). Has 2 cu. yd. lightweight bucket. 90-ft. steel mast. 2-drum hoist, front drum 2-speed. 150 HP, 900 RPM, 3-phase, 440-Volt. Has moved less than 100,000 cu. yds. If interested, contact:

GRAFE-CALLAHAN CONSTRUCTION CO.
714 W. Olympic Blvd.
Los Angeles 15, Calif.
Phone: Richmond 8-5168

FOR SALE

30" Superior McCulley Gyratory Crusher, with 150 Horsepower Motor —$24,000, central Missouri.

BOX PQ-1102 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE or RENT

1—Full Revolving Electric Gantry Crane, 440-60-3.
1—Full Revolving Steam Gantry Crane, 40 tons capacity.
1—Full Revolving Steam Crane, 60 tons capacity, for barge or gantry mounting.
1—955-A P&H Diesel Crane, with Fairlead, only 400 hrs.
2—250' Car Floats or Barges.
1—Steel Stiff Leg Derrick, 25 tons capacity, 80' boom. Complete with electric hoist.
4—100 ton — 5-sheave Derrick or Crane Blocks with Shackle, and with Cheek Weighs, reasonable.
4—50 ton — 4-sheave Blocks and Shackle, with or without weights.
2—Steel Barges 210' x 55' x 10'.
20-Pontoon Float Bridges 5' x 5' x 7'.
4—5½ yd. Rex Truck Mixers on 10 wheel Macks.
1—#1 Vulcan Pile Hammer.
1—#5-S McKiernan-Terry Single Acting Pile Hammer.
2—25 ton P. & H. Truck Cranes
2—100 ton Steel Stiff Leg Derricks with 150' booms, and with three-drum diesel hoists with independent swingers. Guaranteed equal to new and available immediately.

WILLIAM P. SWIFT
P.O. Box 174, Springfield, Pa. - Kingswood 3-8099

LIQUIDATION

Baltimore, Maryland

5—Bartlett & Snow 8½′ x 35′, 7′ x 30′, 6′ x 30′ direct heat Rotary Dryers complete with feeders, blowers, motors, 304 SS Clad 17′ from feed end.
1—Bartlett & Snow 6′ x 30′ direct heat Rotary Dryer, lifting flights and shell 405 SS Clad, complete with feeder, blowers and motor.
1—Hardinge 6′ x 48″ Conical brick lined Pebble Mill with 30 HP motor, disc feeder and fan.
1—Pennsylvania Reversible Hammer Pulverizer with 50 HP motor.
1—Raymond 16′ dia. single whizzer Mechanical Air Separator with 50 HP motor.
4—Tyler Hummer 4′ x 15′, 3′ x 15′, Type 38 single deck Screens with Thermionic Units.
1—Tyler Hummer Screen 20″ x 5′8″ Junior Tandem with Thermionic Unit.
4—Link Belt totally enclosed Bucket Elevators 28′ to 55′ centers, 8″ x 5″ buckets, motor driven.
4—Bartlett & Snow totally enclosed Bucket Elevators 29′ to 55′ centers, 14″ x 7″ buckets, motor driven.
200 ft. of 24″ and 30″ Troughing Idler Belt Conveyor.
150 ft. of Screw Conveyor 9″, 12″ and 18″ dia. with steel troughs and covers.
1—500 Ton Rectangular Bin with cone bottom.

Representative on Premises
Your Inspection Invited

BRILL Equipment Company
2401 Third Ave. New York 41, N. Y.
or
4101 San Jacinto St. Houston 4, Texas

When You Need
LOW COST—DEPENDABLE
INDUSTRIAL RUBBER PRODUCTS

call CARLYLE

FOR ALL YOUR REQUIREMENTS OF

RUBBER HOSE

Air, Acid, Paint Spray, Solvent Welding, Pile Driver, Discharge Fire, Fuel Oil, Oil Suction & Discharge, Gasoline, Suction Water, Steam, Vacuum Pneumatic, Road Builders

BELTING

Conveyor Elevator, Grader Chute Lining, Hot Material Mucker, V-Belts Transmission

PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

CARLYLE RUBBER CO., INC.
103-107 Warren St., New York 7, N. Y. Digby9-3810

Equipment Located In All Parts of The Country

4¼′ & 3′ Symons, 26″ Telsmith, A-C 322-B Hydrocone, 36″ Superior McCully, #37½ & 38½ Kennedy, 10-A Telsmith gyratories, 3042, 2036, 2540 primary plants, 2036, 2436, 2540, 3042, 4042, 3648, 4248 jaw crushers, 4024 roll, 3630 Dixie hammermill Marcy #86 ball mills, Rod mills 9½ x 12, 5 14, 6½ x 14½. One mile 42″ conveyor. I.R. QM-2 drill. 25 & 80 ton diesel electric locomotives. Double drum hoist 40,000 lbs. at 500 fpm. 6 x 7 feeder with grizzly. 1000 KW diesel generator set. 10½ x 101 Traylor kiln. Complete 175 ton batching plant. 600 bbl. Butler cement plant. 5050 Cedar Rapids impact breaker. 3030 impactor plant.

Crushers: jaw, cone, gyratory, roll, hammermill, Rod, ball & tube mills. Screening, washing & crushing plants. Screw, rake & bowl classifiers. Compressors. Conveyors. Drills. Dump cars. Engines. Feeders. Generators. Hoists. Kilns & Dryers. Locomotives. Motors. Pumps. Screens. Shovels & Draglines. Trucks. Transformers. Weightometers.

STANLEY B. TROYER EQUIPMENT CO.
Box 97 Crosby, Minnesota phone 500

NEW—RAILS—RELAYING
Track Accessories
All prices cheerfully quoted

M. K. FRANK
480 Lexington Avenue - New York City
Park Bldg., Fifth Avenue - Pittsburgh, Penna.
105 Lake Street - Reno, Nevada

FOR SALE

BRAND NEW—1201 LIMA DRAGLINE

85′ Boom, 3 yd. Bucket
Used One Week

Job went sour — Owner will take substantial loss

FRANK SWABB EQUIPMENT CO., INC.
313 Hazelton Nat'l. Bank Bldg.
HAZELTON, PA.
GLadstone 5-3658

FOR SALE
EUCLID REAR DUMP TRUCKS

Bucyrus-Erie Draglines, 2½ yd. to 8 yd.
Bucyrus-Erie Shovels, ¾ yd. to 8 yd.
Northwest Draglines, ¾ yd. to 2½ yd.
Northwest Shovels, ¾ yd. to 2½ yd.
Manitowoc Draglines, 2½ yd. to 5 yd.
Manitowoc Shovels, 2½ yd. to 5 yd.
Marion Shovels & Drags, 4 yd. to 9 yd.
Lima Shovels & Drags, 1½ yd. to 6 yd.
Osgood Shovels & Drags, 1½ yd. to 2½ yd.
Caterpillar Graders & Dozers.
Hi-Lift Shovels.
P&H Truck Mtd. Crane & Hoe, ¾ yd.
2400 Lima Shovel front attachment.
4500 Manitowoc Shovel front attachment.
6″ and 9″ Drills, Diesel and Electric

other equipment available not listed above.

WILLIAM LUBRECHT, III
Construction Equipment
311 W. Diamond Ave. - Hazleton, Pa.
Phone: Gladstone 5-4041 or 5-6128

SAND SCREW: 24″ x 25 ft., steel box, motor, reducer, etc. New condition.
ASPHALT PLANT: Barber Greene with 72″ x 30′ dryer, etc.
PAYLOADER: Hough 1½ yd. capacity.
PUMP: 8″ x 6″, 4 stage, 1400 GPM, 1200′ head, 600 H.P. motor.
MINE LOCOMOTIVES: One 13 ton, 36″ gauge and one 15 ton, 42″ gauge, trolley type, 250 volt.
OVERHEAD CRANE: Morgan 40 ton, 55′ span, 230 volt, D.C.
LOCOMOTIVE CRANE: Industrial Brownhoist, 60 ton with 70′ or 80′ boom, excellent condition.
ROAD ROLLERS: 1—8 ton tandem and 1—10 ton, 3 wheel.
DRAGLINES: Monighan 8 yd., 160 ft. boom, diesel powered. Also, one 8 yd. electric. Monighan 5 yd., 120 ft. boom. Monighan 2-W, 85 ft. boom, diesel powered. Page 625, diesel, 150 ft. boom, 10 yd. bucket.
SHOVELS: Marion 4161, 5 yd. capacity, electric, with or without dragline equipment. Also, one 5 yd. with diesel electric power. Bucyrus Erie 54-B and Northwest 80-D, both diesel powered.
COMPRESSORS: Fuller Rotary 350 H.P., 440 volt, 1850 CFM @ 100 lbs. Ingersoll Rand PRE2, size 33 x 24 & 20½ x 24 with synchronous motor, 150 RPM. Chicago Pneumatic OCE, 26 x 15 x 18 with 400 H.P. synchronous motor, 2200 volts, 200 RPM.
BELT CONVEYORS: One 60″ x 170 ft. and one 60″ x 300 ft., complete with all mechanical parts, belt, supporting structures, motors and drive.
PAN CONVEYOR: 48″ x 110 ft. complete with motor, reducer, etc., heavy duty type, designed for rock.
SCALPING SCREENS: Heavy duty Robins 60″ x 14 ft., 6″ openings, 25 H.P., 220/440 volt motor. NEW condition.
DRYERS & KILNS: Rotary Kiln 10′8″ x 104 ft., ¾″ welded plate, excellent condition. 2—Heavy duty 9′ x 70 ft. dryers with all equipment. NEW condition.
JAW CRUSHERS: 10″ x 20″, 15″ x 36″, 18″ x 30″, 24″ x 36″, 30″ x 42″, 40″ x 42″, with or without motors.
GYRATORY CRUSHER: Allis Chalmers 30″.
REDUCTION CRUSHERS: Allis Chalmers Hydrocone size 636 and one 548, with motors and drive.
CLAMSHELL BUCKET: Williams Material Handling 1¼ yd. capacity.

We Buy and Sell Equipment Throughout North and Central America

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

EQUIPMENT LOCATED
GA. - N. Y. - CALIF. - OHIO - TEXAS - ILL.

GRINDING MILLS

BALL MILLS—3'x4', 4'x8', 5'x6', 5'x8', 5'x10', 6'x5', 6'x7', 6'x8', 6'x10', 9'6"x11'.
HARDINGE MILLS—4'6"x16", 6'x14", 6'x22" 6'x36", 7'x22", 8'x36", 8'x48", 10'x48".
ROD MILLS—12"x24" LAB., 3'x10', 4'x8', 4'x9', 4'x14', 5'x8', 5'x10', 5'x14', 6'6"x14'6" & 8'6"x12'.
TUBE MILLS—5'x14', 5'x22', 5'6"x22', 6'6"x21'.

HAMMERMILLS

JEFFREY 36"x42", 42"x36", 42"x48", 42"x24".
PENNSYLVANIA—2-SXR-100 TPH-THOR 8XT 13-48"x54".
UNIVERSAL—No. 4, 36"x26", 3240 IMPACTOR.
CEDAR RAPIDS—3033.
WILLIAMS—GA-60-44x60 FEED OPENING.

APRON FEEDERS

54"x10'3"—54"x16'—3'x12'.

FILTERS—SEPARATORS—CLASSIFIERS

OLIVER DRUM—8x10', 12'14', 14'x18', 11'6"x18'.
DORR RAKE CLASSIFIERS—5'x25', 8'x38', 12'x31', 14'x30'.

DORR BOWL RAKE—3'x24'x12', 5'x30'x26', 16'x24'x23'.
WOODS SAND CLASSIFIER—72", 96".
CONVEYCO SAND CLASSIFIER—4'x10'.
17 THICKENERS—100', 80', 38', 24', 16' & 12'.
20"x15 EAGLE SINGLE SCREW COARSE MATERIAL WASHER.

ROTARY DRYERS & KILNS

DRYERS—40"x21', 4'x20', 6'x40', 6'x60', 8'x125'.
KILNS—6'x28', 6'x7'x80', 7'x110', 9'x140', 10'x105'.

JAW CRUSHERS

BLAKE TYPE—66"x84", 36"x48", 30"x36", 24"x36", 18"x36", 16"x32".
SINGLE SHAFT—25"x40", 20"x36", 18"x36", 10"x24".
CAM & ROLLER—24"x40", 14"x26", 11"x26", 10"x20", 6"x20".

GYRATORY FINE REDUCTION CRUSHERS

SYMONS—3', 4', 5½'.
KENNEDY—198, 258, 378.
SUP. McC.—6", 10", 18" A-C 322B.

GYRATORY PRIMARY CRUSHERS

6", 10", 14", 16", 26" & 36" SUP. McC.—Gates AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12K.

CONVEYORS

30" x 140', 30" x 160' & 30" x 200'.

STEEL DERRICKS

GUY: 8 TON 85 FT. BOOM, 25 TON 60 FT. BOOM, 15 TON 100 FT. BOOM, 29 TON 115 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM. 1—5 TON 100 FT. BOOM.

ASPHALT & OIL TANKS

15—8,000, 10,000 & 20,000 GAL. CAP. WITH COILS. 6—10,000 GAL. R.R. CAR TANKS.

RAILWAY CARS

177—DUMP STD. GA.—20, 18, 12, 6 & 4 YD.
36—FLATS—10 TON, 40 TON, 50 TON CAP.
44—TANK CARS—8,000 & 10,000 GAL. CAP.
75—V Dump Cars, 1½ & 3 Yd.

R R CAR DUMPER

150 TON CAP. STD. GA. CAR DUMPERS.

AIR COMPRESSORS—ELECTRIC

198, 420 & 676 WORTHINGTON BELTED.
1302 CFM & 1574 CFM INGER. RAND PRE.-2.
1170 CFM GARDNER DENVER BAE1034-2300 V.
1578 & 2200 CFM—OCE—CHGO. PNEU. ELEC.
3078, 3864 & 5040 CFM Inger. Rand.

DIESEL LOCOMOTIVES

1—25 TON, 1—80 TON GEN. ELECTRIC.
2—25 TON PORTER, 1—65 TON WHITCOMB.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

FOR SALE

Used Allis-Chalmers 16" McCulley S. G. Crusher without motor. Excellent running condition. Price $5,000.00.
Also available, at additional cost, new and used spare parts.

OLD COLONY CRUSHED STONE CO.
Vernon St. Quincy 69, Mass.

RAILS

MIDWEST STEEL CORP.
506 DRYDEN ST., CHARLESTON, W VA.

FOR SALE

9—Rotary Dryers & Kilns: 3'x15'; 3'x24'; 42"x25'; 4'6"x40'
2—Rotary Coolers: 104"x30'; 104"x70'
6—BALL MILLS: Allis Ch. 6'x16'; 5'x9'; 6'x5'; Patterson 5"x22', UNUSED
6—MINE HOISTS: Single and Double Reduction
1—Penna. Crusher Ring Type Granulator, Trojan size K3-24, 40 HP
1—Sturtevant 8 x 10 Jaw Crusher

PERRY EQUIPMENT CORP.
1414 N. 6th St. Phila. 22, Pa.
STevenson 4-3505

HIGH PRESSURE JET HOSE

5" 400 lb. PSI working 1600 lb. Test Triple Clamped, Nipples, and HD Flanges Assorted Lengths 6', 10', 25', 30'
Sale or Rent

GRIFFIN WELLPOINT CORP.
881 East 141st Street New York 54, N. Y.
MElrose 5-7704

FOR SALE
SURPLUS CRUSHING EQUIPMENT

1—Austin Western 2540 Jaw Crusher complete with 3' x 10' Feeder, grizzley and 100 H.P. electric motor all mounted on steel skid. Price $15,000.00

1—Farrel Bacon 13 x 48 secondary Jaw Crusher complete witth 125 H.P. electric motor. Price $8,000.00

All equipment in excellent condition and will be available on or about December 1, 1956.

GALLO ASPHALT CO.
1004 Springfield Ave. Irvington 11, N.J.

FOR SALE

No. 38½ Kennedy-Van Saun Gearless Gyratory Crusher. Used only 19 months. Excellent condition.
Complete with patterns.
$6500.00

Smithwick Concrete Products
1750 N.E. Lombard Pl. Portland 11, Ore.

For Best Results

Advertise In

PIT and QUARRY'S

Broadcast Section

●

"The Marketplace of the Industry"

FIFTEENTH ANNIVERSARY SALE
Four Cranes & Shovels

Marion	"381"	¾ yd. Shovel or Crane.
P&H	"255A"	¾ yd. Diesel Shovel.
Insley	"K-12"	½ yd. Trench Hoe or Dragline.
Unit Link-Belt	"514"	½ yd. Trench Hoe, fair condition. Shovel Attachment complete, for LS-85 (¾ yd.)

FIVE TRANSIT MIXERS

Jaeger 3 yd. (4¼ yd. Agitator) HI-Discharge, 1945-1947 Models, one mounted on 6-Wheeler, one unmounted.
Smith 3 yd. (4¼ yd. Agitator) HI-Discharge, unmounted.
Rex 3 yd. (4¼ yd. Agitator) HI-Discharge, mounted F-8 Ford Tandem.
Rex 3 yd. (4¼ yd. Agitator) HI-Discharge, mounted I-H "LF174" Tandem.

SIX END LOADERS

Caterpillar	"D-6"	Diesel Tractor, Trexcavator Loader, Cab, 1950 model—excellent.
Caterpillar	"D-6"	Diesel Tractor w/Trexcavator. Needs some track repairs.
Cletrac	"DGH"	Used Gas Crawler w/Drott HI-Lift 1½ yd. Front End Loader. Needs some track work. Make Offer!
Hough	"HM"	1½ yd. Four-Wheel Drive Payloader, Reconditioned.
Pettibone	"15"	1½ yd. Four Wheel Drive Tractor Shovel.
Pettibone	"175D"	Demonstrator 1¾ yd. (Struck) Tractor Shovel, 4-wheel drive, power shift transmission, planetary axles. New Guarantee.

MISCELLANEOUS

Barber-Greene	"522W"	Bucket Loader, rubber-tired, reduced to sell.
Adams	"411"	Diesel Motor Grader, Cab and Scarifier.
Barber-Greene	"705"	RT Runabout Ditcher, digs 4½ ft. deep.
Chicago Pneumatic	"60"	Reconditioned Portable Compressor. We have 3 of these from $800. to $1250.
Universal	"2036"	R.B. Jaw Crusher, skid mounted, w/Apron Feeder.
Bayport	23 yd.	New Aggregate Bins.
Caterpillar	"D318"	Diesel Electric Generator Set, 40 KW.
Caterpillar	"D13000"	Diesel Power Unit.

NOTE: All This Equipment Located In our Yard.

EIGHMY EQUIPMENT COMPANY
120 S. Pierpont
Rockford, Illinois Phone 4-6706

STONE CRUSHERS
FOR SALE

1—BUCHANAN 30 x 42 JAW CRUSHER—TYPE C
2—#105 AUSTIN GYRATORY CRUSHERS—SHOP NOS. 3757-8
2—#5 AUSTIN GYRATORY CRUSHERS—SHOP NOS. 2847-8
1—#8 AUSTIN GYRATORY CRUSHER—SHOP NO. 2846

EXCELLENT CONDITION—PRICED TO SELL

MARLEY-SYRACUSE, INC.
107 W. Hiawatha Blvd. Syracuse 8, N.Y.
Phone 3-0124

FOR SALE

Pulverizing Plant complete for producing agricultural lime dust or asphalt filler, consisting of:

1 Allis Chalmers 7' x 24' Compeb mill complete with motor and magnetic clutch.
2 6' x 60' Dryers.
1 Sturtevant Air separator.
1 Fuller Kinyon pump for pumping dust to hopper or barges.

In addition we have other equipment in this plant such as screw conveyors, bucket elevator, screens, etc.

NEW YORK TRAP ROCK CORPORATION
For Information write:
230 Park Avenue, New York 17, N. Y.

SPECIALS

1—New 6½'x150', 48'x125' kilns
1—#6 Williams Hammermill
1—28" Telsmith Intercone Crusher
1—10½" Clyde Dehydrator

KILNS

1—4½'x40' Kiln
1—9'x150' Kiln
1—10½'x100' Kiln

DRYERS

1—4½'x39', 9'x60'

CRUSHERS

1—36"x42", 24"x36", 18"x36" 12"x24" Jaw Crushers
2—42"x16" Allis-Chalmers Crushing Rolls
2—24"x14" Rogers Iron Works Crushing Rolls. Rebuilt
1—36"x16" rebuilt Sturtevant Rolls
1—24"x12" Farrell Bacon Crushing Rolls. Rebuilt
1—No. 330 Allis-Chalmers Hydrocones
1—6", 10", 16" and 20" McCully Superior Gyratory Crushers
No. 3 up to 12 Gyratory Crushers

BALL, ROD & TUBE MILLS

1—4'x11' Rod Mills
2—5½'x20' and 5'x22', 6'x22' 7'x24' Tube Mills

MISCELLANEOUS

8'x10', rotary Filters

We Make New Dryers, Kilns, Dust Collectors

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St. New York 4, N. Y.
Phone Whitehall 4-4236

JAW CRUSHER 32x40

Austin Western—New in 1952. Drive, 125 HP Motor—Located at Montpelier Stone Co.—Montpelier, Ind.

SEASTROM & CO.

2351 Kentucky Ave.
Indianapolis, Ind.

25 ton MM Crush, Lorain Mc414 **CRANES**
DRYERS: 5½x40, 6x60, 7x105, 10x101, 8x9x100'.
30 ton **HOIST** & swinger, 150 ton Flory.
CRUSHERS: 440, 1020, 1040, 1524, 1836, 2036, 2436, 2540, 4836, 3042, 4248 **JAW.** #19, 37½ Kennedy, 16", 18", 20", 30", 36" McCully, Traylor 2'4" & 4TZ GYR. 1616, 3018, 4022 **DBL. ROLL.** 2' & 3' **CONES.**
PLANTS: AWBI, Pitmaster, Pioneer 305. Others 2' & 14' Air **SEPARATORS.** Scalos.
Cat D8800, D13000, D17000, GMC 260 HP **DIESELS.**
MILLS: 4½x16", 6x8, 6x15 Ball. 5x14, 6x14 Rod. 3660, 4248, 3624, 4224, 2033, 4033 Hammer.
APRON FEEDERS: 42"x12', 42"x16', 48"x14', 54"x14'
WASHERS: Eagle 14"x14', 16"x12', 7x30.
SHOVELS & DRAG: Bucyrus 10B, 22B, 38B. NW 5, 6, 7, 80D. Link Belt LS50, LS90. Koehring 605. Marion 40A, 92. Lima 1201.
Repres: Bonded Scale & Machine Co.
MID-CONTINENT EQUIPMENT CO. INC.
8321 Gannon St. Louis 24, Mo. Wydown 1-2826

QUARRY EQUIPMENT

Cedarapids 4033 hammermill secondary. Rebuilt.
Cedarapids 1036-2416 Junior tandem. Rebuilt.
Cedarapids single pass plant with 1024 jaw.
Cedarapids BBB 1036 scalping unit on rubber.
30" x 82' belt conveyor with 15 H.P. wrap drive.
36" x 4'6" apron feeder.
Williams 20" x 33" pulverizer.
12" x 35' inclined open elevator. New.
Seco 3' x 10' triple deck vibrating screen. Reconditioned.
27½ ton, single-compartment, 8' x 12' bin.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two-compartment, 13' x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.
18" diameter x 20" face magnetic pulley.

SHOVELS AND CRANES

Lorain 820 2-yard diesel shovel-crane-drag. Reconditioned.
Lorain 75A shovel, 1¼-yard. Very good condition.
Lorain L50K 1-yard diesel crane. Excellent.
P & H 255A, ¾-yard diesel shovel.
Lima 34 Paymaster ¾-yard diesel shovel.
Lorain Byers 83 ¾-yard diesel powered backhoe.
Lorain Byers 83 ¾-yard gas powered clamcrane.
Buckeye 70 ¾-yard gas powered shovelcrane.
Lorain L-15, ½-yard gas powered backhoe.
Bucyrus-Erie 10B ⅜-yard shovel, hoe, crane.
Link-Belt LS-50 backhoe, gas power.
Lorain MC504-W crane clam. Very satisfactory condition.
American 375BT truck crane.

TRACTORS, TRUCKS, SCRAPERS, ETC.

1—Euclid 18-yard twin engine scraper. Very good condition.
1—Euclid 15.5-yard Scraper. Excellent condition.
1—Euclid 12-yard Scraper. Excellent condition.
6—Euclid 18-yard bottom dumps.
2—Euclid tractors with 3200 gallon water tank semi-trailer.
1—Euclid Model 3BV loader.
3—Caterpillar DW-10 scrapers. Reconditioned.
1—Caterpillar DW-10 with Athey side dump.
1—Caterpillar DW-15 scraper. Excellent.
1—International TD9 crawler tractor.
1—International TD18 with Bucyrus-Erie bulldozer blade. Excellent condition.
2—Allis Chalmers HD-10 Tractors with Hydraulic Bulldozer Blades.

DIESEL POWER UNITS

Cat. D4600, 6-cylinder, 66 H.P. at 1200 RPM.
Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt.
Cat. D13000, 145 H.P. at 1000 RPM. Rebuilt.
GMC 671, 6-cylinder. Rebuilt.
GMC, twin diesel. Rebuilt.
GMC 3021C, 3-cylinder. New.
GMC 371RC 38A, 3-cylinder. Rebuilt.
International UD18A, 6-cylinder. Reconditioned.

AIR COMPRESSORS

105 cu. ft. Ingersoll-Rand gas portable.
142 cu. ft. Gardner-Denver two-stage stationary.
160 cu. ft. Ingersoll-Rand gas portable.
500 cu. ft. Gardner-Denver diesel portable.
600 cu. ft. Gardner-Denver diesel portable.
500 cu. ft. Ingersoll-Rand, Waukesha Power.
420 cu. ft. Gardner-Denver two-stage stationary.
312 cu. ft. Ingersoll-Rand Type 40 stationary, electric. Practically new.

ASPHALT PLANT

Barber-Greene Model 848 with drier, graduation unit, etc.

L. B. SMITH, INC.

CAMP HILL, PA.

Phone Harrisburg REgent 7-3431

DEPENDABLE USED MACHINES

Special: Pioneer Oro all-Manganese-steel apron feeder 42" wide, like new.

Mesabi 5 x 12 screen	Cletrac DGH with Drott 1½ yd. loader	Unit 10-20A crane
Telsmith 4 x 10 screen	Pioneer port. gravel plant	NW 1 yd. crane
36" x 200' conveyor	Symons vibrating bar grizzly	Osgood 200 crane
30" x 128' conveyor	Recip. feeder for 30" belt	Insley K-12 crane
30" x 43' conveyor	American 20 HP car puller	16 x 16 roll crusher

This equipment rebuilt in our modern plant by expert mechanics. Come see it.

10004 Southwest Highway **TRACTOR & EQUIPMENT CO.** **Oak Lawn, Ill.**

KILNS—COOLERS—DRYERS

705-20 Link-Belt Roto Louvre, SS
502-16 Link-Belt Roto Louvre
8'6" x 35' Bartlett-Snow Rotary Dryer
7' x 30' Bartlett-Snow Rotary Dryer
6' x 30' Bartlett-Snow Rotary Dryers (2)
5' x 20' x ¼" welded

PULVERIZERS—MILLS—CRUSHERS

8" x 15" Pacific Jaw Crusher
18" x 18" Jeffrey 1-roll spiked
14" x 16" B. & S. 2-roll spiked
Raymond #1 Pulverizer
Pennsylvania Impact Pulverizer 50 HP
6' x 48" Hardinge Conical Mill
20" x 12" Jeffrey Hammer Style A, NEW
15" x 8" Jeffrey Hammer Style B, NEW

BUCKET ELEVATORS

28' to 53'6" c/c 8x5 buckets (4)
29' to 55'4" c/c 14x7 buckets (4)

SCREENS

Rotex #21, 40" x 84"
Robinson Gyro Sifter 28A
Tyler-Hummer 4' x 15' single deck
Tyler-Hummer 3' x 15' single deck
Universal Roads 18" Cent. Separator
Raymond 16' Single Whizzer

MISCELLANEOUS

47' Screw Conveyor, 15" 2 HP motor
12" Merrick Weightometers
Rotoclone Collector, Type W, Size 36
Bin 22'8"x20'6"x4'10" plus 13'3" Cone

►SEND US YOUR INQUIRIES◄

HEAT & POWER CO., INC.

60 East 42nd St. New York 17, N.Y.
MURRAY HILL 7-5280
(Machinery & Equipment Merchants)

PUMP FOR SALE

1—Ingersoll-Rand Model 10ALV 4210 GPM, 275' Head, Size 10 x 12, 1775 RPM. Can fit with 400 HP 1800 RPM synchronous or induction mtor to customer specifications.

Phone LIMA, OHIO, 2-4710
THE LIMA ARMATURE WORKS, INC.
142 E. Pearl St. Lima, Ohio

FOR SALE

CLASSIFIER Dorr 26' bowl with rakes 5 to 10 TPH capacity
PAN CONVEYORS 36" x 54' with 7" sides, 30" x 33' with std sides
FEEDERS Two 24" x 10'6" apron feeders as complete integral units
GRIZZLY ROLLS Six rollers 12" x 36" with side frames, sprockets, and chains

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

MOTORS • GENERATORS
TRANSFORMERS
NEW • REBUILT
WORLD'S LARGEST INVENTORY
ELECTRIC EQUIPMENT CO.
Phone Station Collect GL 3-6783
P. O. BOX 51
ROCHESTER, NEW YORK

SHOVELS — DRAGLINES
DRILLS
CRANES — EUCLIDS

625 Page Diesel Drag, 160′, 10 yard
6160 Bucyrus Monighan Elec. Drag, 160′, 8 yd.
621-S Page Diesel Drag, 125′, 7½ yd.
200-W Bucyrus Monighan Drag, 125′, 6 yd.
7-W Monighan Elec. Drag, 120′, 7 yd.
2400 Lima Drag, 110′, 6 yd.
7200 Marion Diesel Drag, 135′
120-B Bucyrus Erie Elec. Drag, 115′, 5 yd.
5-W Bucyrus Erie Drag, 120′, 5 yd.
4500 Manitowoc Drag, 120′, 5 yd.
1055 P&H Drag, 90, 3½ & 4 yd.
1201 Lima Drag, 85′, 3 yd.
54-B Bucyrus Erie Comb. Crane & Drag
802 Lima Cranes
3500 Manitowoc 60 ton Crane
3500 Manitowoc Drag, 80′, 2½ yd.
955 P&H Drag, 90′, 2½ yd.
903 Osgood Drag, 70′, 2 yd.
5480 Marion Elec. 15 yd. Shovel
170-B Bucyrus Erie Elec. 6½ yd. Shovel
1600 P&H 6 yard Shovel
2400 Lima Standard 6 yard Shovel
120-B Bucyrus Erie Elec. 4½ yd. Shovel
4500 Manitowoc 4 yd. H. L. Shovel
1201 Lima Standard 3½ yd. Shovel
1201 Lima 2½ yd. H. L. Shovel
3500 Manitowoc 2 yd. H. L. Shovel
3000-B Manitowoc 2 yd. Shovel
820 Lorain 2 yard Shovel
803 Lima 1¾ yd. H. L. Shovel
Unit 1020 ¾ yd. Shovel—1 yr. old
600 Reich Heavy Truck Mounted Rotary Air Drills (Both Lever Arm and High Mast)
Davey Rotary Truck Mounted Air Drills
Mayhew Rotary Truck Mounted Air Drills
58-BH Joy Champion Rotary Air Drills
42-T, 29-T and 27-T Well Drills
Portadrill Truck Mounted Air Drill
Euclid Trucks—27FD, 18FD, 8TD, 36FD, 82FD, 13TD, 14TD, 63TD—Bottom & Rear Dumps

FRANK SWABB EQUIPMENT CO., INC.
313 Hazelton Nat'l Bank Bldg.
HAZELTON, PA.
GLadstone 5-3658

FOR SALE

1-RAYMOND 6-ROLL HIGH SIDE ROLLER MILL, MODEL 6669 WITH AIR SEPARATOR AND CYCLONES, ALL REQUIRED MOTORS INCLUDING 100 HP AND 200 HP 3 PHASE, 60 CYCLE, 220/440 VOLT MOTORS, ROTARY FEEDER, FURNACE AND OIL BURNER AND ALL PARTS OF COMPLETE INSTALLATION.

CONDITION: EXCELLENT.

R. GELB & SONS, INC.
U. S. 22 UNION, N. J.
MURDOCK 6-4900

FOR SALE
ONE BRAND NEW 16" SUPERIOR McCULLY GYRATORY CRUSHER. NEVER BEEN USED DUE TO CHANGE OF PLANS.
PRICE $26,000
F.O.B. McCOOK, ILL.
DOLESE & SHEPARD CO.
Route 66 & East Ave. Hodgkins, Ill.
Phone: FLEETWOOD 4-2800
Ask for Mr. Doody

FOR SALE OR RENT—EASY TERMS
Rebuilt — A I Condition
488 Bucyrus Erie Shovel 2 cy Diesel
Northwest Model 6 Shovel, 1½ c.y.
Caterpillar D8 Bulldozer
WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6000

BALL MILLS FOR SALE

2—4′x8′ Kennedy-Van Saun Ball Mills manganese steel liners, motor driven, with Feeders, Blowers, etc

Previously used as Coal Pulverizers. Now installed at Camden Forge Company plant, Camden, N. J.

Available for immediate shipment.

CONSOLIDATED PRODUCTS COMPANY, INC.
63 GARDEN ST.
HOBOKEN, N. J.
Tel.: OL—9-4425 N. Y. Tel.: BA—7-0600

The Broadcast Section of Pit and Quarry is the Best Advertising Medium for your Idle Machinery and Equipment

---

SHOVELS—CRANES

Quick-Way Model L, ½ yd. w/40′ boom and shovel, gas engine, mounted on White Halftrack, first class condition. PRICE F.O.B. LOUISVILLE, KY. $7,500.00

Bucyrus-Erie Model 10-B ⅜ yd. Shovel on Crawlers—good operating condition. PRICE F.O.B. LOUISVILLE, KY. $3,750.00

Bucyrus-Erie Model 29-B, 1 cu. yd. Shovel. Powered by Caterpillar Diesel Engine. PRICE $2,500.00

Attachments:
Bucyrus-Erie 10-B, ⅜ yd. Shovel Front $ 850.00
Bucyrus-Erie 15-B, ½ yd. Shovel Front 1,275.00
Bucyrus-Erie 22-B, ¾ yd. Shovel Front 2,500.00

Write, Wire or Phone Jim Waddell
BRANDEIS MACHINERY & SUPPLY CO.
Brook & Warnock Sts. Louisville, Ky.
MElrose 7-4741

FOR SALE

Sturtevant 20x14 Rolls
Sturtevant Automatic Coal Crusher
Link Belt 3′x8′ Double Deck Screen
Link Belt 40′ Steel-Bucket Elevator 12x7
Raymond 3′ Air Separator

J. H. PERKOSKI
Investment Bldg. Pittsburgh 22, Pa.

FOR SALE

Lorain Model 820 Shovel equipped with 2½ yard Dipper with Waukesha Diesel Engine. Also equipped with 85 foot crane boom and approximately $2500.00 parts. Machine is five years old but has not been used last three. Recently overhauled and not used since. Very attractive price F.O.B. Colorado.

ANDERSON EQUIPMENT CO. INC.
13th & Farnam Omaha, Nebraska
Phone Harney 2533

FOR SALE

1—Lorain Model MC524 30 Ton Moto Crane 80′-0″ Folding Boom 20′-0″ extra boom Section; 1—25′-0″ Jib, 636 Rudomatic Tagline and Floating Harness, First Class Condition.

1—Lorain Model MC524 Backhoe on Rubber equipped with Floats and Screws, also 70′-0″ of Sectional Boom, First Class Condition.

THE EDWARD E. BRAY CONSTRUCTION CO.
362 River Street Bridgeport 6, Conn.

PRICED TO SELL

1—Page—1½ yd. Type RC Drag Bucket SN6-2670
1—Agg. Bin—28 c.y.
1—Syntron Vibratory Feeder, Model F-22
1—Woods Auto-Vortex Bowl Sand Classifier—20′ Dia.
1—Woods Sand Classifier—72″ Dia.
1—Woods Sand Classifier—96″ Dia.

Located at Fargo, North Dakota
Offered Where Is—As Is—Subject to Prior Sale

GARRISON SPILLWAY CONSTRUCTORS
P. O. Box 1363
Fargo, North Dakota
Phone: 5-9242

CEDARAPIDS AAAA Portable 25x40 r.b. Jaw Crusher Primary Plant w/12' feeder, underconveyor, diesel power, on tandem rubber. Overhauled. Excellent. $21,000.

UNIVERSAL Portable Secondary Plant w/30x18 r.b. Double Roll & #3 Hammermill, 30" conveyor system, 4x12 2-deck Simplicity screen, rotovator, Buda diesel, Cat. 30 K.W. diesel electric generating system, mounted on tandem rubber. Rebuilt. $17,500 Rental Purchase. Yard.

CEDARAPIDS 2-Unit Portable Crushing & Screening Plants, w/18x24 r.b. Jaw crusher, feeder & vibr. grizzly screen, underconveyor, power unit, factory mounted tandem rubber Secondary portable w/16x24 r.b. Double-Roll, 3x8 2-deck vibr. screen, rotovator return wheel, 2—folding type delivery conveyors, power unit, mounted tandem rubber. Excellent. $15,000 Rental Purchase.

DIAMOND 24x36 r.b. Jaw Portable Primary Plant w/12' apron feeder, conveyor, Cat. Diesel power, on tandem rubber. Secondary Diamond 95 Portable Plant w/40x22 r.b. Double Roll, Cat. D17000 diesel power, mounted tandem rubber. Good. $37,500.

ROGERS 21x40 r.b. Jaw Crusher Portable Primary Plant w/feeder, underconveyor, diesel power, on tandem pneumatics. SECONDARY Portable Plant w/30x40 Gruendler hammermill, 5x12 3-deck Screen, rotovator, 30" belts, diesel power, on tandem rubber. Excellent. Yard.

SEMI-PORTABLE PLANT, dismantling & selling by units. With Pioneer 25x40 r.b. Jaw, 12' feeder, motor, undercrusher conveyor, on steel frame. Secondary plant w/30x24 r.b. Double Roll, 10x36 Jaw, 5x10 2-deck scalper, plant conveyors, motors, on steel frame. RIP RAP Assembly w/42x10 apron feeder, 4x10 Simplicity Scalping screen, 24"x30' & 24"x60' conveyors. WASHER Assembly w/30"x15' Eagle Twin Screw washer, motor & conveyors.

UNIVERSAL 20x36 r.b. Crusher, good. $4850.00 Yard.

SUPERIOR McCULLEY 30" Gyratory crusher, good. $22,000.

SUPERIOR McCULLEY fine reduction crusher, 6" opening, w/50 hp. motor, excellent, $3,000.

CEDARAPIDS 10x24 r.b. Jaw Crusher, overhauled. $2500.00 Yard.

UNIVERSAL 10x16 Jaw Crusher, excellent. $450 Yard.

CEDARAPIDS 30x33 Hammermill, excellent. $2650.

JEFFRIES 36x36 Hammermill, B3, with Cat. D337 diesel power. A1. Yard.

LIPPMANN 24x32 Hammermill, like new. Yard.

McLANAHAN 18x36 Single Roll Crusher. Good. Yard.

DIAMOND 3x6 heavy duty vibr. Screen, excellent. $400 Yard.

SECO 3x6 2-deck vibr. Screen. $400 Yard.

ROBBINS 4x10 2-deck Gyrex screen w/adjustable cast iron base. $1350 Yard.

SIMPLICITY 4x12 2-deck Horizontal type Screen. Excellent. Yard.

PIONEER 48"x30' Portable Apron Feeder, good. Yard.

CONVEYOR, 182x125' w/10 hp. motor, reduction gearbox, belting, anti-friction rollers, supports. $1200 Yard.

PORTABLE CONVEYOR 18"x36' w/engine, new belting, on pneumatic tires. Good. $1300 Yard.

boom, late model. Yard.

BUCYRUS ERIE 22B Electric Mine Shovel, short boom, late model. Yard.

LORAIN 150 Shovel, 1 cy. diesel, new 1950. Good. Yard.

INGERSOLL RAND 315 cfm Portable Diesel Air Compressor, w/UD18 engine, excellent. $3250. Yard. Rental Purchase.

WENZEL MACHINERY RENTAL & SALES CO.
565 S. 10th Kansas City, Kans.
Mayfair 1-1710

FOR SALE

1—42x40	Farrell Jaw Crusher
30x42	Buchanan Jaw Crusher
18x32	Telsmith Roller Bearing Jaw Crusher
14"x26"	Acme Jaw Crusher
10"x20"	Blake Type Jaw Crusher
9"x36"	Telsmith Wheeling Roll Br. Jaw Crusher
#32	Telsmith Gyratory Crusher
28"	Telsmith Intercone Crusher
	Double Chain Bucket Elevator, Bucket Size 20", 60' Centers
10'	Tandem Rome Diesel Scraper
1—100 K.W.	G.M.C. Diesel Generator Set
1—150 K.W.	G.M.C. Diesel Generator Set
16"	Telsmith Gyratory Crusher
30"x42"	Pioneer Jaw Crusher and Feeder
20x36	Pioneer Jaw Crusher and Feeder
36"x30'	Feeder
10"x36"	Cedar Rapids Crusher
10'x30"	Telsmith Rolls
4'x12'	3-Deck Cedar Rapids Screen
4'x10'	2-Deck Cedar Rapids Screen
10—16	Gradler Jaw Crusher
10—20	Jaw Crusher

BLUE BALL MACHINE WORKS
BLUE BALL, PA.

MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE
NUSSBAUM ELECTRIC CO.
220 E. Douglas Avenue Fort Wayne, Ind.

FOR SALE

1 Drill—Blast Hole—#44 Loomis Machine Co. #14517—Crawler Mounted—20 H.P. Electric 3/60/440 Motor, Wire Line, Steel Frame and Mast With Tools, 4½" Stem and Parts.

2 Locomotives, 8 and 12 Ton, 36" Ga. Plymouth Gasoline.

2 Hammer Mills—24" x 24" Eagle Crusher Co.

For further information contact J. H. Clements

BASIC, INCORPORATED
Maple Grove, Ohio
Post Office, Fostoria, Ohio

RELAYING RAIL

Track Accessories
All Sizes
LEFTON INDUSTRIAL CORP.
General Office: 212 Victor Street
St. Louis 4, Missouri

5 TUBE MILLS 7' x 24' & 5'6" x 22'
5 ALLIS CHALMERS & SMIDTH WITH SCREW FEEDERS.
6' x 15' COMBEB MILL
ALLIS CHALMERS MILL WITH FEEDER.
6'6" x 14'6" ROD MILL
HEAVY DUTY, MANG. STEEL LINERS.
8' x 10' DRUM FILTER
ECMICO CONTINUOUS TYPE.
R. C. STANHOPE, INC.
60 East 42nd St. New York 17, N. Y.

KOEHRING DUMPTORS

Three (3) Koehring Dumptors (off the highway) 5¼ yds., struck—6¼ yds., heaped. 16.00x24 and 10.00x20 Tires—70% good. GMC 4-71 Diesel Engines—Excellent condition. These Dumptors are not junkers—GOOD BUYS.

PRICE F.O.B. LOUISVILLE, KENTUCKY
$6,950.00 each

Write, Wire or Phone Jim Waddell
BRANDEIS MACHINERY & SUPPLY CO.
Brook & Warnock Sts. Louisville, Ky.
MElrose 7-4741

8" Used Pipe—5' to 40' Lengths
Models 700 P&H & 75-B Lorain Shovels
Type 34 Lima Comb. Crane-Shovel-Drag.
2750 cu. ft. 500 HP Air Compressor
12,000 & 10,000 Gal. Tanks—GOOD
42" & 48" Belt Conveying Equipment
8-10-15-20-50-125-200 HP BOILERS
H. & P., 6719 Etzel, St. Louis 14, Mo.

FOR SALE or RENT

65 ton Whitcomb Diesel Electric Loco.
45 ton General Electric Diesel Elec. Loco.
10 ton Plymouth Diesel Loco. New 1950.
Christian 2D Hoist & Swing, 138 HP Buda Diesel Engine. 15,000# SLP.
2 100 HP Lucey Portable Horiz. Fire-Box Boilers. 200 lbs. Oil Fired. ASME.
30 ton Wiley Stiffleg Derrick. 80' Boom
1700 CFM Joy Elec. Air Compressor New 1954
600 CFM 1-R Gyrofio Diesel Compressors
4 yd. P&H 155 Dragline new 1950.

MISSISSIPPI VALLEY EQUIPMENT CO.
1907 Railway Exchange St. Louis 1, Mo.

EQUIPMENT

Located Downsville, N. Y.
All offered subject prior sale

10—EUCLID Bottom-Dumps Mod. 43 FDT, 13 c.y.
1—EUCLID Loader, Model 3 BV, Serial BV 22
8—STERLING HCS297 13 c.y. End-Dump Trucks.
8—CATERPILLAR Tractor-Dozers, 1 H Series.
2—ROCK RAKES with LE TOURNEAU Bulldozer Connections.
3—CATERPILLAR Model 12 Graders.
1—LIMA Type 604 1½ c.y. Shovel/Crane.
1—BUCYRUS-ERIE 2½ c.y. Shovel/Dragline.
1—LORAIN TL20 ½ c.y. Moto-Crane, Shovel/Crane/Backhoe Combination.
1—Dipper Handle for P. & H. 1055.
1—Digging Bucket for P. & H. 1055, 3½ c.y.
1—MEAD-MORRISON 2 c.y. Re-Handling Clamshell Bucket.
1—OWENS Clamshell Bucket, ¾ c.y., Type D.
1—HELTZELL Concrete Bucket, 1½ c.y.
1—BLAW-KNOX Concrete Bkt., 1 c.y., C-31-KB
1—WILEY Concrete Bucket, 1¾ c.y.
1—REX Model 160 Double Pumpcrete, complete with 900 ft. 7" pipe, fittings and assorted specials.
1—GARDNER-DENVER Grout Pump, Model EF-FS, 10x4x10.
4—WORTHINGTON 2-Stage Turbine Pumps, Model 12-QG-H2 (2 electric and 2 diesel driven); capacity 1500 GPM @ 110 ft. head, @ 1770 R.P.M.

GROUP OF 12 ASSORTED PUMPS (Marlow, Carter, Gorman-Rupp, C.H.&E., Worthington, 3" to 6", Centrifugal).
1—BRUNNER, Elec. Compressor, H07-BC.
1—INGERSOLL-RAND Electric Compressor, V253-N5.
1—INGERSOLL-RAND Compressor, Portable, 315 c.f.m., Cummins diesel engine HB6.
1—WESTINGHOUSE Electric Compressor, Model 3 VC.
1—HOBART Elec. Welder, 300 amp. 220/440 V.
1—WESTINGHOUSE Electric Welder, 300 amp. Model DC-Type RA-220/440/550 V.
1—P. & H. Electric Welder, Type WG-301. 60/375 amp. Generator; Chrysler Model IND engine, type 6A-211.

LARGE ASSORTMENT AIR TOOLS (Jackhammers, Pavement Breakers, Tampers, Rivet Hammers, Busters, Impact Wrenches, etc.)

MISCELLANEOUS SMALL EQUIPMENT AND POWER TOOLS (Power Saws, Drills, Sanders, Grinders, Bar Bender, Light Plants, Hydraulic Press, Hydraulic Jacks.)

REPAIR PARTS— Large Stocks—for Allis-Chalmers, Tractor and Grader, Baker Bulldozers, Bendix-Westinghouse, Buda, Cummins and G.M.C. diesel engine, Caterpillar Tractor, Delco-Remy, Euclid, International Tractor TD24 International Dodge and Ford Trucks, Gar Wood Hydraulic Hoist, Jaeger Mixer, LeTourneau, Lima Shovel, P. & H. Shovel, Rex Pumpcrete, Sterling Truck, and others. Also large stock miscellaneous hardware items (bolts, nuts, etc.) Complete lists furnished on request. *Will price right for bulk sales.*

"GRIZZLY" EARTH PROCESSING PLANTS"
Plant No. 1— designed to produce 2,600 c.y. per hour of "B" Pervious material.
Plant No. 2— designed to produce 1,350 c.y. per hour of "A" Impervious material.

BOTH PLANTS COMPLETELY DISMANTLED
Ask for detailed list of components

BIANCHI CENTRAL MUNROE-LANGSTROTH, RUGO
A Joint Venture
24 Union Avenue Framingham, Mass.
(Tel. TRinity 2-4341)

SHOVEL CABLE Mill Stocks At Savings!

Every size, all constructions, any voltage available from Universal Wire & Cable Chicago warehouse stock. Top quality cables meeting exacting specifications.

Type SH-A Type SH-C
Type SH-B Type-G Type SH-D

In addition a complete stock of portable power cables is carried

Mining Machine Cable Welding Cable
Portable Control Cable Locomotive Cable
Shot Firing Wire Trolley Wire
Feeder Cable

UNIVERSAL Wire & Cable Co.
2727 North Paulina St., Chicago 13, Illinois
BRANCHES: Houston, Texas • Los Angeles, Cal.

FOR SALE

3—10" McCully Gyratory Crushers
3—Traylor No. 412 Type TZ Gyratory Crushers
1—New RCA Metal Detector 10" x 36" aperture
1—20" Traylor Heavy Duty Finishing Crusher
4—Allis Chalmers Gates "D" Crushers, Size 6
1—Traylor Rolls Crusher—30" x 72"
1—Fuller Kinyon System
1—Allis Chalmers Compeb Mill (for Pulverizing Limestone)
1—Covered Steel Barge, suitable for carrying cement
1—Covered Wooden Barge, suitable for carrying cement
2—6' x 60' Dryers for Pulverizing plant

For information write:

NEW YORK TRAP ROCK CORPORATION
230 PARK AVE. NEW YORK 17, N. Y.
TELEPHONE MURRAY HILL 9-8500

FOR SALE

D-8 Cat. S/N 13A1372 w/#25 & 8S blade $14,000.
Cat. 70 Scraper $5350.00.

A. C. R. CO.
19615 Nottingham Rd. Cleveland 10, Ohio

FOR SALE

Caterpillar Diesel Engine

D-364 - Serial #19B59

This engine is in A-1 condition. It has been completely overhauled and is complete with Twin Disc. Clutch Model EH-121-P00, Spec. No. 22162. Ideal for Shovel - Dragline or Power Unit.

The Masteller Coal Co.
RFD 4, Keyser, West Virginia

STEEL PLATE - 5¢ LB.

Carbon Steel Punched Plate Landing Mats, like new. These mats which have never been used are not bent and have little or no rust. They are 10' x 18", interlocking and have much greater area coverage than solid steel. Can be used for improvised roads into sandy and hard to get to places - sides and bottoms for trucks where solid steel is not required - stock enclosures, etc., etc. - $100 per ton F.O.B. Albany, Georgia, minimum order. Pictures upon request - Write or Phone:

Cramer & Maurer
2330 S. Rte. 7 - Phone 2-1620
HOLLYWOOD, FLORIDA

FOR SALE

One Bucyrus Erie Model 27-T Blast Hole Drill same as new.
Complete with tools ready to go.

FAYETTE LIMESTONE CO., INC.
P. O. Box 32 Washington C.H., Ohio
Phone 27871

8' x 125' VULCAN 3/4" SHELL RIV. ROTARY KILN

DARIEN CORP.
60 E. 42ND ST. N. Y. 17, N. Y.

FOR SALE

1 only Cat D13000 Power Unit (new)
1 only 4¼' Std. Symons Cone Crusher (new)
1 only 4' Short Head Symons Cone Crusher (new)

Subject to prior sale.

KENTUCKY-VIRGINIA EQUIPMENT CO.
4926 Southern Pkwy. Louisville, Ky.

SCREEN BARGAIN

New Simplicity Model BD 4'x8' double deck with motor mount and drive $1800.

EDDY & CO.
2500 So. Penn. Lansing, Mich.

DRAGSCRAPER

Sauerman Long Range Dragscraper; two drum, heavy duty hoist unit. 3 Cu. Yd. Crescent Scraper bucket with teeth. IHC UD 1091 power unit. All necessary cables and clamps for 500' span. Just like new. Used less than 50 hours. Can be seen in our yard.

SIOUX ROAD, INC.
Sioux Falls, So. Dak.
Phone 4-4587

FOR SALE

2—12 ton, 36" Gauge, Model JLA Plymouth locomotives—Serial #5119-5120
1—10 ton, 36" Gauge Model DLC, Buda Engine Plymouth locomotive Serial #3285
1—10 ton, 36" Gauge JLA Plymouth locomotive
6—6 Cubic Yard 36" Gauge all steel, Pressed Steel Car Co. side dump cars, Timkin Bearings
8—5 Cubic Yard, 36" Gauge, Square side dump cars, Plain Bearings. 50 tons, 40 lb. rails.

FOLEY & BEARDSLEE
CLARKSTON, MICH.

6" PIPE FOR SALE

30 Miles of 6¼" O.D. Armco, Spiral-weld linepipe, 8-lb., 12 ga., 6" I.D. with 5" welded 6⅝" O.D.—6" I.D. end Collars and Victaulic Couplings. Can be beveled for welding. Material like new. Can be inspected, Mt. Pleasant, Michigan. Was used in 500# gas line. F.O.B. cars, 90c per foot.

EVALUATION AND SALES SERVICE
P. O. Box 416 Mt. Pleasant, Michigan
Phone SPring 3-3981

PIT AND QUARRY GOES WHERE SALES ARE MADE

You too can dispose of your surplus equipment at very small cost.

IDLE EQUIPMENT + P & Q = CASH

Practically every day we receive letters from readers telling us they are seeking used equipment. A good way to get back a large part of the money you spent for machinery you are no longer using, is to sell it through the Classified Sections of Pit and Quarry and The Concrete Manufacturer . . . The largest classified advertising section serving the Industry.

PIT AND QUARRY CLASSIFIED SECTIONS
431 South Dearborn St. Chicago 5, Illinois

Index to Advertisers

A

A A Wire Products Co. 371
Admiral Alloy Steel Corp. 296
Adrian Peerless, Inc. 383
Alemite Division, Stewart-Warner Corp. 41
Allied Steel & Tractor Products, Inc. 216
*Allis-Chalmers Mfg. Co. 13, 170, 269
*Allis-Chalmers Mfg. Co., Buda Division 38-39
*Allis-Chalmers Mfg. Co. Construction Machinery Division 121, 231, 240
American Chain & Cable Co., Inc. 60, 61, 248
American Clay Machinery Div. of Huber-Warco Co. 325
American Cyanamid Co. 287
American Hoist & Derrick Co. 295
*American Pulverizer Co. 67
American Road Builders' Assn. 180
*American Steel & Wire Div. U. S. Steel Corp. 72-73
Anaconda Wire & Cable Co. Sub. of Anaconda Copper Mining Co. 410
*Armco Drainage & Metal Products, Inc. 220
Armstrong-Bray Co. 264
Atlas Conveyor Co. 280
Atlas Powder Co. 113
Austin Powder Co. 284
Automotive & Aircraft Division, American Chain & Cable Co., Inc. 248
Available Truck Co. 279

B

*Babcock & Wilcox Co. 125
*Bailey Meter Co. 232
Baker-Raulang Co. 301
Baldwin-Lima-Hamilton Corp. Construction Equipment Div. 412
*Barber-Greene Co. 33, 309
Bay City Shovels 126
*Bergen Machine & Tool Co., Inc. 344
*Besser Co. 304, 313, 384
Bianchi, Central, Munroe-Langstroth, Rugo 407
*Bin-Dicator Co. 374
Bonded Scale & Machine Co. 400, 401
Bradley Pulverizer Co. 293
Brill Equipment Co. 403
Broadcast Section 399-408
*Brunner & Lay, Inc. 30
Bucyrus-Erie Company 290
*Buda Division, Allis-Chalmers Mfg. Co. 38-39
*Buell Engineering Co., Inc. 267

C

Calumet Division 225
Cambridge Instrument Co., Inc. 271
Cape Ann Anchor & Forge Co. 262
Carlyle Rubber Co., Inc. 403
Carolina Tire Co. 293
Carpenter Manufacturing Co. 381
Caterpillar Tractor Co. 65, 81, 281
Chain Belt Co. 214, 348
Champ Corporation 373
Chase Foundry & Mfg. Co. 383
Chevrolet Motor Division, General Motors Corp. 167
Chicago Pneumatic Tool Co. 22
Cities Service Oil Co. 49
*Clark Equipment Co. 18-19, 21, 283
Cleveland Vibrator Co. 276
Cleveland Wire Cloth & Mfg. Co. 4
Cleveland Worm & Gear Co. ....Inside Back Cover
Coates Steel Products Co. 227
*Colorado Fuel & Iron Corp. 237, 277
Colorado Iron Works Co. 56
Columbia Machine Works 366
Columbia Southern Chemical Corp. 363
*Combustion Engineering, Inc. Raymond Division 20
Commercial Shearing & Stamping Co. 294
Concrete Manufacturer Classified Section 385-387
Concrete Transport Mixer Co. 376
*Construction Machinery Co. 392
Cook Bros. Equipment Co. 359
*Cross Engineering Co. 272

D

Davey Compressor Co. 70
Daybrook Hydraulic Division 226
*Deister Concentrator Co. 64
*Deister Machine Co. 8
Des Moines Glove & Mfg. Co. 379
*Diamond Iron Works, Inc. 7
Dodge Mfg. Corp. 238
*Dorr-Oliver, Inc. 122
Drott Mfg. Corp. 128
Du Pont de Nemours & Co., E. I. 278
Dur-O-waL 377

E

*Eagle Crusher Co. 53
*Eagle Iron Works 25
Easton Car & Construction Co. 3
Eaton Mfg. Co. 31
Economy Forms Corp. 316
Edick Laboratories 391
Ehrsam & Sons Mfg. Co., J. B. 296
Eighmy Equipment Co. 404
Eimco Corporation 29
Elberfeld Mfg. Co., Inc. 382
Ensign-Bickford Co. 199
Equipment Corp. of America 402
Erickson Power Lift Trucks, Inc. 393
Euclid Division, General Motors Corp. 45
Extremultus, Inc. 244

F

*Falk Corporation 179
Farrell-Cheek Steel Co. 288
Firestone Tire & Rubber Co. 172
Fiske Bros. Refining Co., Lubriplate Division 54

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

RUGGED BUTYL INSULATION plus neoprene jacketing gives this ANACONDA Mine Power Cable long life under rugged conditions: 60-ft. drop over rocky cliff, unprotected from sun or weather in northern open-pit mine.

BUTYL INSULATION MEANS LONGER LIFE

This Cable is as tough as the terrain looks!

Experience shows that in high-voltage mine power cable, the insulation must provide not only good ozone resistance but *mechanical strength* as well.

The unusual tensile strength and inherent ozone resistance of Anaconda's butyl insulation means the strongest, sturdiest mine power cable ever offered you.

In addition, this insulation resists heat, moisture and has high dielectric strength. Over the insulation is a tough, abrasion-resistant neoprene jacket—engineered from years of testing in our own mines.

NEW ENGINEERING BULLETIN EB-27 has full details on performance of Anaconda butyl insulation in 15 Industry Specification tests. Ask the Man from Anaconda for your copy as well as more information about ANACONDA Mine Power Cable. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

56381

SEE YOUR ANACONDA®

DISTRIBUTOR FOR MINE POWER CABLE

Flexible Steel Lacing Co. 66
*Food Machinery & Chemical Corp. 321
Forney's Inc. 387
Forrer's Division,
Spray-O-Bond Co. 379
Four Wheel Drive Auto Co. 331
Frank, M. K. 403
*Frederick Iron & Steel, Inc. 270
Frog, Switch & Mfg. Co. 62
*Fuller Co. 192-193, 357
Fuller Mfg. Co. 211

G

Galion Allsteel Body Co. 263
Gardner-Denver Co. 174
Gar Wood Industries, Inc. 274-275
Gas Machinery Co. 367
General Engines Co., Inc. 386
General Motors Corp. 45, 167
General Tire & Rubber Co. 165
Giffels & Vallet, Inc. 115
Gilson Screen Co. 291
GO Corp. 318-319
Goodrich Industrial Products Co., B. F. 414
Goodyear Tire & Rubber Co. 1
Gordon's Concrete Products 387
Griffin Corp., Larry 314
*Gruendler Crusher & Pulverizer Co. 258
Gwynne, Inc., J. H. 384

H

H & L Tooth Company 255
Hannon & Sons, F. R. 282
*Harbison-Walker Refractories Co. 285
*Hardinge Company, Inc. 254
Hazard Wire Rope Division,
American Chain & Cable Co., Inc. 61
Heat & Power Co., Inc. 405
Heidenreich, E. Lee, Jr. 399
Heineken, Inc., W. P. 271, 405
*Hendrick Mfg. Co. 258
Hendrix Mfg. Co. 116
Hetherington & Berner, Inc. 271
*Hewitt-Robins, Inc. 222-223
Hough Co., Frank G. 238-239
Huber-Warco Co.
American Clay Machinery Division 325
*Hyster Co. 369

I

*Ingersoll-Rand Co. 173
International Alloy Tool Steel Co. 66
International Harvester Co.,
Construction Equipment Div. 128, 177, 202-203, 215
Motor Trucks 168-169
International Nickel Co. 234
International Paper Co.
Bagpak Division ..... Inside Front Cover
*Iowa Manufacturing Co. 204-205
Irvington Form & Tank Corp. 382

J

Jaeger Machine Co. 242
Jeffrey Mfg. Co. 28
*Joy Manufacturing Co. 6

K

Kaiser Aluminum & Chemical Corp. 261
Kansas City Hay Press Co. 264
*Kennametal, Inc. 44
*Kennedy-Van Saun Mfg.
& Engrg. Corp. 16-17
Kensington Steel Co. 217
Kent Machine Co. 302
Kirk & Blum Mfg. Co. 372
Koehring Co. 50-51
*Kraft Bag Corp. ..... Back Cover

L

Large Engineering Co., H. B. 64
LEAP Concrete, Inc. 370
Lehigh Portland Cement Co. 315
Leschen Wire Rope Division,
Div. of H. K. Porter Company, Inc. 252
LeTourneau-Westinghouse Co. 119, 235, 259, 354-355
*Link-Belt Company 95, 243
*Lippmann Engineering Works, Inc. 76-77
Lone Star Cement Corp. 300
Lubrecht III, William 403
Lubriplate Division, Fiske Bros. Refining Co. 54

M

MacDonald Engineering Co. 298
Mack Trucks, Inc. 265
Manhattan Rubber Division,
Raybestos-Manhattan, Inc. 98-99
Manitowoc Engineering Co. 124
Marion Power Shovel Co. 245
Marsh Engineering Co., E. F. 189
*McLanahan & Stone Corp. 228, 229
McNally Pittsburgh Mfg. Corp. 221
McNamar Boiler & Tank Co. 341
Memphis Equipment Co. 372
*Merrick Scale Mfg. Co. 42
Mid-Western Industries, Inc. 249
Mine & Smelter Supply Co. 246
Moline Malleable Iron Co. 219
Monarch Road Machinery Co. 358
Moore Dry Kiln Co. 389
*Morris Machine Works 247
Murphy Diesel Co. 118

N

National Concrete Masonry Assn. 364
National Iron Co. 297
National Wire Cloth Co. 377
Neff & Fry Co. 212
New York Engineering Co. 37
New York Trap Rock Corp. 408
Noble Company 310-311
*Nordberg Manufacturing Co. 68-69
Norfolk & Western Railway 176
*Northern Blower Co. 256
Northwest Engineering Co. 5
Norwalk Vault Co. 389

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

LIMA

Announcing
TWO NEW LIMAS

TYPE 1250

3 CU. YD. HEAVY-DUTY SHOVEL

HIGH-CAPACITY DRAGLINE

85 TON CRANE AT 13′ RADIUS

Here are two powerful additions to the LIMA line of power shovels, cranes, draglines and pullshovels. The Types 1250 and the 1250-SC are the carefully engineered answers to the popular demand for a high capacity shovel and a crane that will hoist concrete and steel to the top of a 24-story building.

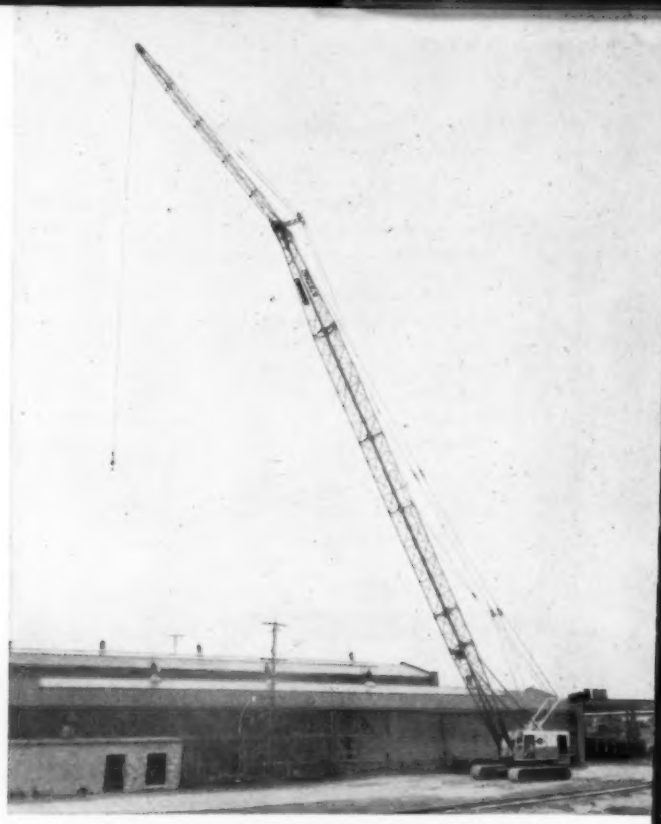
As a standard shovel, the 1250 is equipped with a 28-foot boom, 22-foot handle and three cubic yard dipper; as a high lift shovel, with a 45-foot boom, 32-foot handle and 2½ cubic yard dipper.

The 1250-SC is designed for sky-scraping duty, a rugged machine that swings a 200-foot boom and 50-foot jib with pin point precision.

These air operated rigs are in the big-time producer class yet their design permits knock down for haulage into units of less than 60,000 pounds. Side frames and counterweight segments are removable and the gantry can be folded to a height of 12-feet, 7¼ inches for job to job transportation.

Two truck bases are available—standard and widespread as well as two lengths of crawler assemblies (standard and long). The bases are one-piece carbon steel castings, bored and bushed for through axles.

The 1250 and 1250-SC are available with diesel or electric power and with or without torque converter drive.



TYPE 1250-SC

100 TON CAPACITY ON 60′ BOOM AT 13′ RADIUS

18 TON CAPACITY ON 200′ BOOM AT 50′ RADIUS

Get complete details on this profit-making machine from your nearby LIMA distributor, or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

COMPARE LIMA QUALITY
. . . features and available equipment:

- Independent propel
- Load-lowering device
- Extra high-speed hoist attachment
- Third drum
- Power-reversing hoist drum
- Heavy-duty and special lightweight booms
- Telescopic boom stop with automatic shutoff
- Steering controlled by gear-type jaw clutches
- Electric lighting equipment
- Torque converter drive
- Anti-friction bearings at all important bearing points

QUALITY CONSTRUCTION

One-piece carbon steel rotating truck base . . . fabricated steel machinery frames . . . machine-cut gears . . . heat-treated steel ground shafting . . . large diameter clutches and brakes.

THE LIMA LINE INCLUDES:

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS
to 6 cu. yds.	to 110 tons	variable	½ to 2½ cu. yds.

Smaller machines available on rubber

SEE THE NEW LIMA 1250 AT THE ROAD SHOW, BOOTH 506 ARENA IN CHICAGO, JAN. 28—FEB. 2.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA SHOVELS · CRANES DRAGLINES · PULLSHOVELS

BALDWIN BLH LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

O

Olsen Corp., Gene 318-319
O'Neill, A. J. 403
Oswalt Engineering Service Corp. 375

P

*Page Engineering Co. 55
Patterson Foundry & Machine Co. 224
*Pennsylvania Crusher Div., Bath Iron Works Corp. 196
Pennsylvania Drilling Co. 399
*Pettibone Mulliken Corp. 233
Pfarrer Co., W. H. 212
Philadelphia Gear Works, Inc. 75
Porter Company, Inc., H. K. 252
PreCaster, Inc. 360
Preco, Inc. 260
Presto Brick Machine Corp. 361
Productive Equipment Corp. 15
Punch-Lok Co. 244

Q

"Quick-Way" Truck Shovel Co. 34-35
Quinn Wire & Iron Works 356

R

Radio Corporation of America 353
Raybestos-Manhattan, Inc. Manhattan Rubber Division 98-99
*Raymond Division, Combustion Engineering, Inc. 20
Republic Rubber Division 171
Roebling's Sons Corp., J. A. 127
*Rogers Iron Works Co. 253
Rollway Bearing Co., Inc. 43
Ross Engineers Ltd. 286
Ross Screen & Feeder Co. 286

S

Salem Tool Co. 250
Sauerman Brothers, Inc. 178
Schaffer Poidometer Co. 262
*Screen Equipment Co. 251
Service Recorder Co. 276
Side-O-Matic Unloader Corp. 332
*Simplicity Engineering Co. 104-105
Sitton Septic Tank Co., Inc., Philip 324
Sly Mfg. Co., W. W. 59
*Smidth & Co., F. L. 111, 213, 266
Smith Engineering Works 91
Smith, Inc., L. B. 405
*Smith Co., T. L. 317
Solvay Process Division, Allied Chemical & Dye Corp. 383
Southern Lightweight Aggregate Corp. 26
Southern Tire Co. 270
Spang & Company 230
Spillman Co., R. L. 386
Spraying Systems Co. 270
Standard Dry Kiln Co. 381
Standard Metal Mfg. Co. 264
Stanhope, Inc., R. C. 404
Stearns Magnetic Products 273
*Stearns Manufacturing Co., Inc. 394
*Stedman Foundry & Machine Co., Inc. 46
*Stephens-Adamson Mfg. Co. 86-87
Stewart Warner Corp., Alemite Division 41
Stoody Co. 195
Straub Mfg. Co. 257
*Sturtevant Mill Co. 175
Superior Pneumatic & Manufacturing, Inc. 379
Surety Rubber Co. 377
Swabb Equipment Co., Inc., Frank 406
*Syntron Co. 9

T

Tamms Industries, Inc. 388
Taylor-Wharton Iron & Steel Co. 166
Texas Company 11
Thew Shovel Co. 123
*Thomas Foundries, Inc. 184
*Thor Power Tool Co. 117
Timken-Detroit Axle Div. 108-109
Timken Roller Bearing Co. Rock Bit Division 241
Torrington Company 268
Towmotor Corporation 307
Tractomotive Corporation 58
Transall, Inc. 27
*Traylor Engrg. & Mfg. Co. 14
Trinity Div., General Portland Cement Co. 381
Truck-Man Division, Knickerbocker Co. 390
*Twin City Iron & Wire Co. 389
Twin Disc Clutch Co. 120
*Tyler Co., W. S. 47

U

Unit Step Form Co. 374
United States Rubber Co. 63
*United States Steel Co. 72-73
*Universal Door Carrier, Inc. 384
*Universal Engineering Corp. 233
Universal Road Machinery Co. 296
*Universal Vibrating Screen Co. 218
Unverzagt & Sons, G. A. 402

V

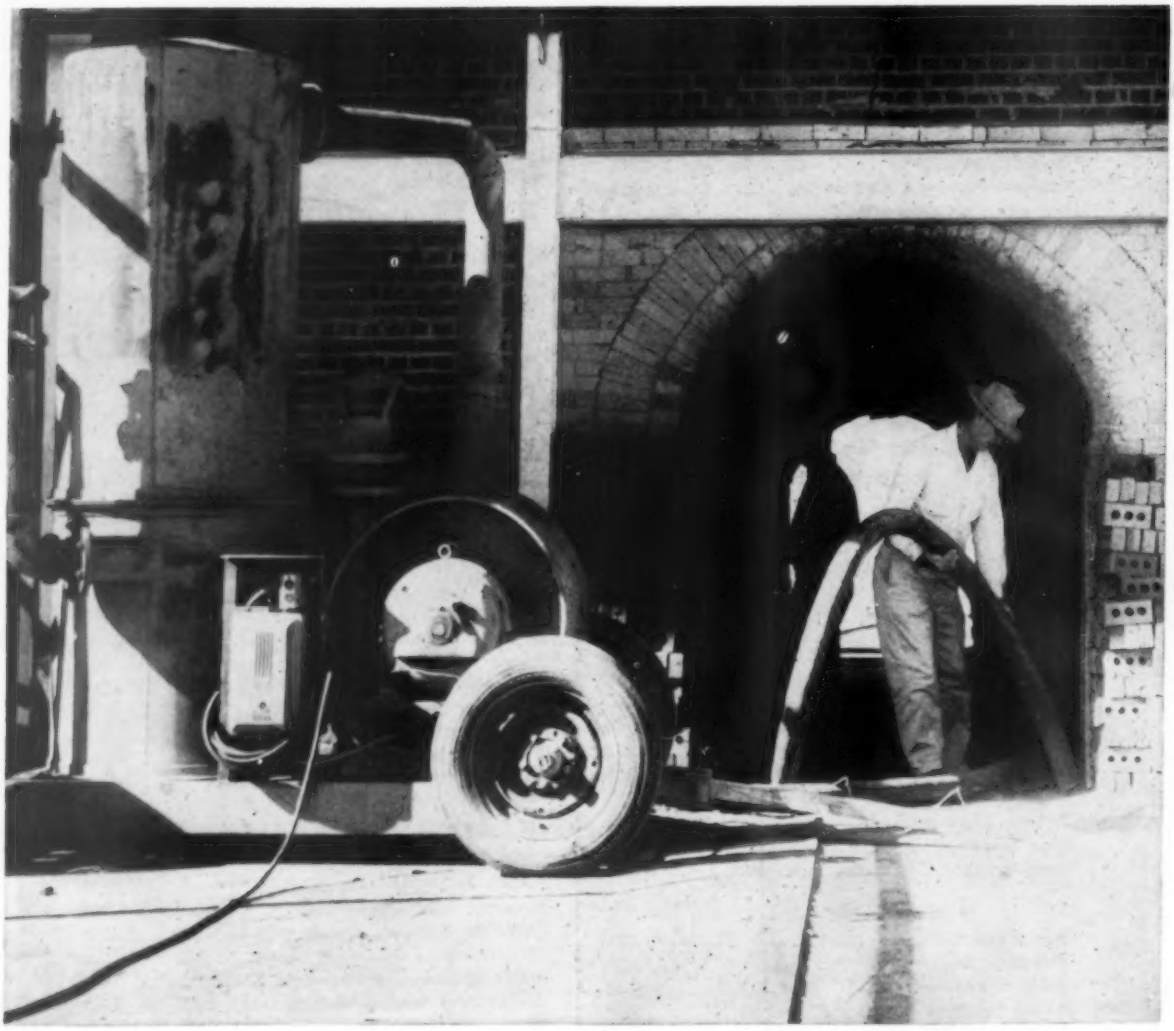
Victor Equipment Co. 114
Virginia Gear & Machine Corp. 75
Vulcan Iron Works 74

W

Wall Colmonoy Corp. 272
Wedge-Wire Corp. 286
Wenzel Machinery Co. 407
*Western Precipitation Corp. 292
Westinghouse Transit Mixer Division, LeTourneau-Westinghouse Co. 354-355
Williams, Roger F. 381
Winpower Mfg. Co. 32
Winter-Weiss Co. 57
Wire Rope Corp. of America 62, 218
Wisconsin Motor Corp. 88
*Wood Co., Chas. E. 244
Worthington Corporation 342-343

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

B.F.Goodrich report:



Hose swallows pieces of hot brick

B. F. Goodrich improvement in rubber brought extra savings

Problem: That man is using a king-size vacuum cleaner to clean out brick kilns. Powerful suction from the machine whisks up hot brick chips, sand and other sharp particles, just as a home vacuum sucks up dirt.

But for a while, this looked like one of those good ideas that just wouldn't work. A flexible rubber hose had to be used, and it couldn't stand the gaff. The sharp pieces of brick wore holes through one hose in *only 30 minutes.*

What was done: When a B. F. Goodrich man heard about the trouble, he suggested a new hose made by B. F. Goodrich. It is made with a special lining of the toughest wear-resisting rubber known. It's so tough that, on many jobs, this rubber outlasts the hardest steel 10 to 1.

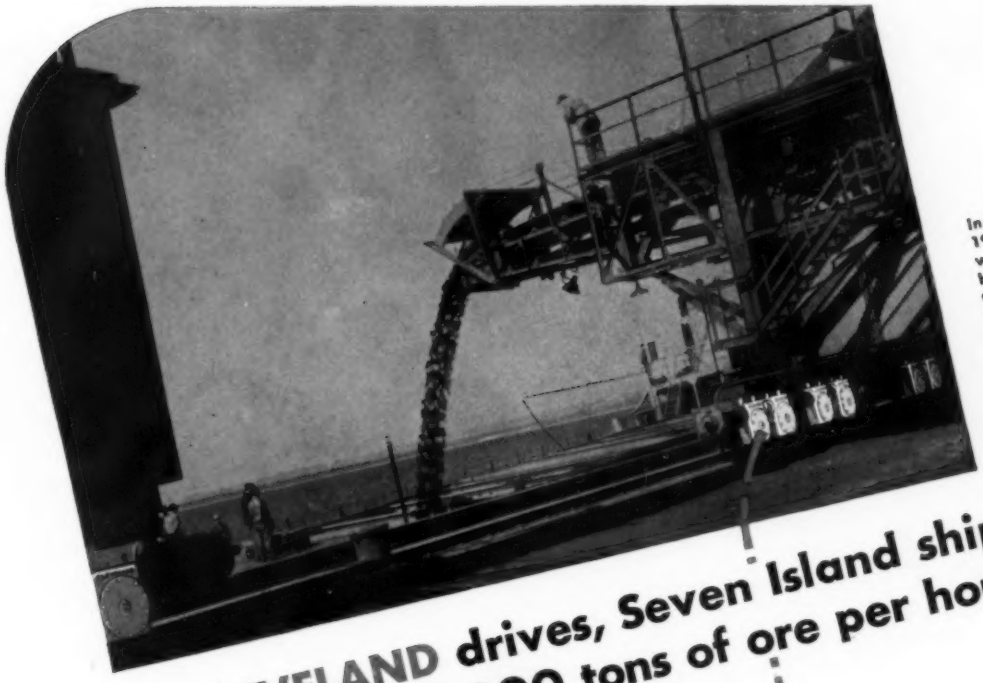
Savings: The B. F. Goodrich hose was tried. It has now given more than two years of service, and is still in excellent condition. No holes, no repairs, no problems of any kind.

Extra benefits: B. F. Goodrich has made hundreds of improvements in dozens of kinds of hose to make them last longer, cost less. Most improvements, while making the hose stand more abuse, have also made it more flexible and easier to handle.

Where to buy: Your B. F. Goodrich distributor has many more facts about this brick company's problem and the hose used to solve it. And as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B. F. Goodrich makes for industry. *B. F. Goodrich Industrial Products Company, Department M-829, Akron 18, Ohio.*

B.F.Goodrich

INDUSTRIAL PRODUCTS



In service since July, 1954, these drives were manufactured by Cleveland's Canadian licensee, Peacock Bros. Ltd., with worm gear sets supplied from Cleveland.

With 32 CLEVELAND drives, Seven Island shiploaders can handle 8,000 tons of ore per hour

THIS monster shiploader and its twin each have an hourly rated capacity of 4,000 long tons. The two machines thus can load 12,000,000 tons or more during the normal shipping season.

Rich brownish-red iron ore from Labrador and Quebec promises to play an increasing part in supplying the steel mills of the Free World—and in loading every ton of it, Cleveland Worm Gear Speed Reducers have a part. In the photograph showing one of the loaders in action, you can glimpse seven of the 32 specially built Clevelands that are mounted in groups of four on the legs of the loaders. Through them power from the electric motors is applied in order to position and adjust the great steel frames carrying the belt conveyors for quick, accurate delivery of ore into the holds of waiting ships.

Whatever your power transmission job, there's a Cleveland to do it surely, safely, efficiently, economically. Write for Catalog 400. The Cleveland Worm & Gear Company, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

Are you good at figures?
EXAMPLE 1
Valve Bags for Granular or Pulverized Materials
If you increased filling production from 12 per minute to 15 or more per minute — without paying a penny more for sleeve or special insert bags... what would be the percentage of increase — and dollar savings to you — per ton — per hour?
EXAMPLE 2
Open Mouth Bags for Free Flowing Materials
If you increased filling production from 15 per minute to 20 or more per minute — without paying a penny more for your open mouth multiwall bags... what would be the percentage of increase — and dollar savings to you — per ton — per hour?

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N. Y.
Daily News Bldg., Chicago 6, Ill.

Gilman PAPER CO.
- St. Marys Kraft Corp.
- Gilman Paper Co.
- The Coburn Corp.
- Kraft Bag Corp.

--check and mail today ------

- ☐ We are interested in Example 1.
- ☐ We are interested in Example 2.
- ☐ We are interested in both examples.

NAME OF COMPANY _____

ADDRESS _____

CITY _____ ZONE ____ STATE ____ PRINCIPAL _____

PRODUCT MFD _____

We have the bags and the packer to effect such savings—*or more!*

Give us the time to give you the facts!

Dependable as a service for 3 generations. Exclusive Sales Agents for the Kraftpacker Automatic Filling Machine and one of the largest integrated producers of multiwall bags with plants in St. Marys, Georgia and Gilman, Vermont, manufacturing every type of multiwall bag in use today!